

**FACTORS AFFECTING ADOPTION OF URBAN AGRICULTURAL
INTERVENTIONS AMONG HIV AND AIDS AFFECTED HOUSEHOLDS IN NAKURU
MUNICIPALITY, KENYA**

GIDEON MUCHIRI MURIITHI

**Thesis Submitted to the Graduate School in Partial Fulfilment for the Requirements for
the Award of Master of Arts in Sociology (Community Development and Project
Management) of Egerton University**

EGERTON UNIVERSITY

APRIL, 2011

DECLARATION AND RECOMMENDATION

DECLARATION

This thesis is my original work and to the best of my knowledge has not been presented for an award of any degree, diploma or certificate in this or any other university.

Sign..... Date.....

Name: Gideon Muchiri Muriithi

AM17/1933/07

RECOMMENDATION

This thesis has been submitted with our approval as the official university supervisors

Sign..... Date.....

Dr Wokabi Mwangi (PhD)

Department of Peace, Security and Social Studies

Sign..... Date.....

Dr Kibet A. Ngetich (PhD)

Department of Peace, Security and Social Studies

COPYRIGHT

All rights reserved; no part of this thesis may be reproduced, stored in any retrieval system, or transmitted in any form or by any means; electronic, mechanical, photocopying, or recording or by any information storage or retrieval system without permission of the author or Egerton University.

Gideon Muchiri Muriithi © 2010

DEDICATION

Dedicated to my dear wife Mary Waturi, our beloved children Lydia Njoki, Mercy Warukira, Leonard Muriithi and Faith Wanjiku

ACKNOWLEDGEMENTS

It was not an easy task to change my orientation of thinking from Agricultural Economics background to Sociology. This enabled me to grasp and interpret sociological concepts. It laid a strong foundation in the task of carrying out this independent quantitative and qualitative research. Special thanks go to the two supervisors who tirelessly kept on guiding me through the entire research process up to completion. Without their contribution, the thoroughness of this write up could be incomplete. In this juncture, I specifically recognized Dr Wokabi Mwangi one of the supervisors who challenged me in the initial stages when coiling the research idea “Mr Muriithi you should mesh your agricultural knowledge with the sociology knowledge you have acquired in your masters programme”, he said and I salute him for that. I also acknowledge Dr Kibet Ngetich, my other supervisor who kept on encouraging me all through the research process. Dr Hadija Murenga from the department of Peace Security and Social Studies, I salute you. You kept on counseling me when life turned tough. I am indebted to all members of *Badili Mawazo* group and the households’ members whom I visited and interviewed during the data collection in Nakuru Municipality, I salute them all.

This acknowledgement cannot be complete without thanking, Dr Ephraim Mukisira, the Director Kenya Agricultural Research Institute (KARI) for granting me study leave and Dr. William Muhuyi, the Centre Director KARI-Lanet for enabling me to start my studies smoothly. Also, I am grateful to the CGIAR-Canada linkage fund from the Canadian International Development Agency (CIDA), to Ryerson University and Urban Harvest of the International Potato Centre (UH-CIP) for funding my field work and giving me a chance to work and interact with a team of highly experienced researchers from UH-CIP. My special thanks go to Prof. Nancy Karanja, the regional UH-CIP Coordinator for authorizing the research funds that I used in my field work and Dr Gordon Prain for reviewing the initial research proposal. Further, I wish to thank Dr Jenifer Levy the qualitative researcher from University of Toronto whom I worked very closely and her guidance in qualitative research techniques. Also, my thanks go to Mr Mbugua, the project site coordinator who immensely kept on orientating me within the Sustainable Environment and Health through Urban Agriculture project. Finally, I acknowledge my dear wife Mary and our children for the moral support they provided to see me through this programme.

ABSTRACT

This study focused on the socio-economic, social cultural and project design related factors affecting the adoption of urban agricultural (UA) intervention for the poor urban HIV and AIDS affected households in Nakuru Municipality. Objectives of the study were; to assess the link between socio-cultural and socio-economics status and adoption, to evaluate the link between project design's related factors and adoption and to capture individual's social life history and relate it to adoption of intervention. Shortage of food and of good quality is a common phenomenon in the slums where these kinds of households are found. It is disheartening to observe that only a few are embracing UA. Theoretical framework used were; Innovation-Diffusion and Rational Choice Theories. Cross-sectional survey and case study research designs were employed for the quantitative and qualitative data respectively. Sixty two households were sampled for the survey using multi-stage sampling and six in-depth case studies. Both descriptive and inferential statistics were performed for the survey by SPSS version 15. In-depth interviews for the case studies were transcribed and individual cases reported. Based on results, majority 43% of the respondents' age ranged from 40-49 years. Respondents' age had a significant relationship with adoption of the intervention. On gender of the household's head, majority (78%) were women and showed a significant relationship with adoption of the intervention. Majority (63%) sourced labour beyond self. Labour source had a significant relationship with adoption of the intervention. Most households (63%) reported to increase their income by embracing the UA intervention and showed a significant relationship. Majority (63%) gained social benefits by embracing the intervention. They singled the benefits as; reduced stigma raised their social status and enhanced scope of friends. Socio-economics factors such as age, gender of the head of household, accessibility of labour and impact of intervention on income featured prominently to influence the adoption. A project on UA for HIV and AIDS affected households should target elderly persons mostly women and integrate socio-psychological counseling in their programs. Non-rain fed UA is most appropriate for HIV and AIDS affected households and sustainability of the project. Apart from medical treatment a HIV and AIDS individual should have an access to quality food as well. Further research on adoption of other crops and livestock and ranking them by their social role in alleviating food insecurity in urban poor HIV and AIDS affected households and recommend the most suitable and sustainable urban agricultural intervention for poor urban resource limited HIV and AIDS affected households.

TABLE OF CONTENTS

DECLARATION AND RECOMMENDATION	ii
RECOMMENDATION	ii
COPYRIGHT	iii
DEDICATION	iv
ACKNOWLEDGEMENTS	v
ABSTRACT.....	vi
TABLE OF CONTENTS	vii
LIST OF TABLES	xi
LIST OF FIGURES	xii
LIST OF MAPS.....	xiii
LIST OF PLATES	xiv
LIST OF ABBREVIATIONS	xv
CHAPTER ONE	1
INTRODUCTION.....	1
1.1. Background to the Study	1
1.2. Statement of the Problem.....	3
1.3. Objectives of the Study.....	3
1.3.1. Broad Objective.....	3
1.3.2. Specific Objectives	3
1.4. Research Questions	4
1.5. Justification of the Study	4
1.6. Scope and Limitations of the Study	5
1.7. Definition of Terms	6
CHAPTER TWO	8
LITERATURE REVIEW AND THEORETICAL FRAMEWORK	8
2.1. Introduction.....	8
2.2. Urban Agriculture in Kenya	8
2.3. Types of Intervention to Mitigate the Impact of HIV and AIDS on Affected Households	9
2.3.1. Microfinance a Tool to Mitigate impact of HIV and AIDS on the Affected Households ..	10
2.3.2. Agriculture as an Intervention to Mitigate the Effects of HIV AND AIDS	11

2.4. Characteristics of Poor Urban HIV and AIDS Affected Household.....	14
2.5. Sociological Factors Influencing the Adoption of Urban Agriculture Intervention	16
2.6. Theoretical Framework.....	18
2.6.1. Innovation-Diffusion Theory	18
2.6.2. Rational Choice Theory	20
2.6.3. Synthesis of the Two Theories	21
2.7. Conceptual Framework.....	22
CHAPTER THREE	24
METHODOLOGY.....	24
3.1. Introduction.....	24
3.2. Study Area	24
3.2.1. Location of the Study area	24
3.2.2. Support Groups for people living with Aids in Nakuru Municipality.....	26
3.2.3. Population of People Living with Aids in Nakuru Municipality	26
3.2.4. Hospitals dealing with care and treatment of HIV and AIDS	27
3.3. Research Design.....	27
3.4. Population	28
3.5. Unit of analysis	28
3.6. Sampling procedure and sample size	28
3.6.1. Probability sampling.....	29
3.6.2. Non-probability sampling	29
3.6.3. Sample size	30
3.7. Source of data.....	30
3.7.1. Primary data	30
3.7.2. Secondary data	31
3.8. Data Collection	31
3.8.1. Structured Interview schedules	31
3.8.2. Interview guide (unstructured interview)	32
3.8.3. Ethical consideration	32
3.9. Operational definitions of variables	33
3.9.1. Urban agricultural intervention adoption levels.....	33

3.9.2. Socio- economic factors	33
3.9.3. Social cultural factors	34
3.9.4. Social life history.....	34
3.9.5. Project design related factors	34
3.9.6. Tool development and measurement.....	34
3.10. Data Analysis	35
CHAPTER FOUR.....	36
RESULTS AND DISCUSSIONS.....	36
4.1. Introduction.....	36
4.2. Results	36
4.2.1. Demographic Characteristics of the Household Respondents	36
4.2.2. Highest Education Level of household respondents	41
4.2.3. Ethnic and religious affiliation for the household respondents.....	43
4.2.4. Cultural value of the household respondents	44
4.2.5. Medical Care Expenditure and Household Heads’ Employment status.....	45
4.2.6. Proportions of members contributing and source of their income	47
4.2.6. Provision of Labour for urban agriculture practice	51
4.2.7. Background experience in agriculture and choice of urban agriculture intervention	52
4.2.8. Social benefits and impact of the UA on household income	54
4.2.9. Case Studies	57
4.3 Discussion.....	75
4.3.1 Age distribution of respondents and the adoption of UA intervention	75
4.3.2 Gender and Marital Status of respondents.....	76
4.3.3. Highest Education level of the respondents and adoption of UA intervention.....	79
4.3.4. Ethnicity affiliation, Religion and Culture of respondents	80
4.3.5. Social Benefits Accrued from Intervention and the adoption of UA Intervention	82
4.3.6. Medical care expenditure and household heads employment status.....	83
4.3.7. Source of income and members contributing to household income	84
4.3.8. Provision of labour and adoption of UA intervention	85
4.3.9. Background experience in Agriculture and Choice of UA intervention of respondents.....	86
CHAPTER FIVE.....	90

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	90
5.1. Introduction.....	90
5.2. Summary of the Findings.....	90
5.2.1. Sociological factors	90
5.2.2. Project design’s related factors	92
5.3. Conclusions.....	93
5.3.1. Theoretical Conclusions	93
5.3.2. Empirical Conclusions.....	93
5.4. Recommendations	96
5.4.1. Policy Recommendations	96
5.5. Area for Further Studies	97
REFERENCES.....	98
APPENDICES	103
APPENDIX 1: Interview Schedule.....	103
APPENDIX 2: In-depth Interview Guide	107
APPENDIX 3: Respondents’ Residential Urban Estates.....	109
APPENDIX 4: Letter of Research Authorization.....	110

LIST OF TABLES

Table 3.1: Number of people living with Aids in Nakuru Municipality.....	27
Table 3.2: Health Facilities in Nakuru Municipality	27
Table 3.3: Gender composition of the household survey.....	29
Table 3.4: Sample composition of in-depth case studies	30
Table 3.5: Summarized profile of the urban agricultural intervention adoption levels	33
Table 4.1: Age distribution of the household respondents.....	37
Table 4.2: Gender Distribution of the household respondent.....	38
Table 4.3: Gender for the Household Head.....	38
Table 4.4: The relationship between Gender of respondent and adoption level	39
Table 4.5: The relationship between Gender of household head and adoption level	39
Table 4.6: Number of males and females with HIV and AIDS infection in a household.....	39
Table 4.7: Marital Status of the household respondents	40
Table 4.8: The relationship between marital status of household respondent and adoption level.....	40
Table 4.9: Number of persons living in a household in the study area.....	41
Table 4.10: Relationship between highest educational levels and adoption level.....	42
Table 4.11: The relationship between Ethnic affiliation of the respondent and adoption level	43
Table 4.12: Culture of the household respondents.....	45
Table 4.13: Amounts of money spent on medical care by a household per month	45
Table: 4.14: Employment status of household heads and adoption levels.....	46
Table: 4.15: Relationship between number contributing to H/H income and adoption level	47
Table 4.16: Relationship between agricultural intervention adoption and sources of income.....	50
Table 4.17: Source of labour for urban agriculture practices	51
Table 4.18: Type of vegetables in the project and the adoption.....	53
Table 4.19: The relationship between Project Choice of Vegetables and Adoption level.....	54
Table 4.20: Social benefits accrued from adoption of the intervention	54
Table 4.21: Status of household income since joining the UA intervention project	55

LIST OF FIGURES

Figure 2.1 Conceptual Framework	23
Figure 4.1. Distribution of respondents by their highest education levels	42
Figure 4.2. Ethnic Affiliations of the Urban Agricultural Intervention Participants	43
Figure 4.3. Religion and urban agricultural intervention practices	44
Figure 4.4. Employment status of household heads	46
Figure 4.5. Number of people contributing to household income	47
Figure 4.6. Sources of household income by the respondent	48
Figure 4.7. Source of labour and adoption levels of urban agriculture intervention	51
Figure 4.8. The UA intervention the communities were more comfortable with.....	52
Figure 4.9. Social Benefits accrued from the urban agricultural intervention project.....	55
Figure 4.10. The effect of the urban agricultural intervention on household income	56

LIST OF MAPS

Map 1: Urban and Peri-Urban Agriculture Intervention Sites-Nakuru Municipality.....	25
---	----

LIST OF PLATES

Plate 1: Urban vegetable growing training session on multistory technology at Tumaini cluster site on 5/7/2007	60
Plate 2: A member of Badili Mawazo at her kiosk with friends, selling vegetable from urban agriculture intervention project at Manyani cluster site on 5/7/2007	62
Plate 3: Exotic and indigenous vegetables grown by Badili Mawazo support group members on Undeveloped plot at Bondeni cluster 17/8/2008	66
Plate 4: A participant of urban agricultural intervention project feeding dairy goat on orange remians from the market at Manyani Estate on 25/10/2008.....	69
Plate 5: Vegetables grown (kales) on an undeveloped plot at Manyani estate on 31/10/2008	71
Plate 6: Participant milking the dairy goat(left) and (Right) participants sharing milk at Bondeni cluster site on 24/8/2008	74

LIST OF ABBREVIATIONS AND ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
AIV	African Indigenous Vegetables
BMSHG	“ <i>Badili Mawazo</i> ” Self-Help Group
CARE	Cooperative for American Relief Everywhere
CBOs	Community Based Organisations
CCC	Comprehensive Care Centre
CIP	International Potato Centre
DASCO	District Aids and Sexual Transmitted Diseases Coordinator
FBOs	Faith Based Organisations
H/Hs	Households
HBC	Home Basic Care
HIV	Human Immunodeficiency Virus
IGA	Income Generating Activities
MFOs	Micro Finance Organizations
MOH	Ministry of Health
NACC	National Aids Control Council
NCACC	Nakuru Constituency Aids Control Committee
NDASCO	Nakuru District Aids and Sexual Transmitted Diseases Coordinator
NGOs	Non-Governmental Organisations
NYS	National Youth Service
PGH	Provincial General Hospital
PLWHA	People living with HIV and AIDS
SEHTUA	Sustainable Environment and Health through Urban Agriculture
SPSS	Statistical Package for Social Sciences
SSA	Sub Sahara Africa
UA	Urban Agriculture
UH-CIP	Urban Harvest of the International Potato Centre
US\$	United States dollar
VCT	Voluntary Counseling and Testing

CHAPTER ONE

INTRODUCTION

1.1. Background to the Study

This study examined factors affecting adoption of urban agricultural intervention for poor urban HIV and AIDS affected households in Nakuru Municipality. The issues that motivated the study were that, these kinds of household are living in the slums where they frequently experience shortage of quality food, inadequate income, unsecured livelihood while most of them are weak to provide productive labour and others are on antiretroviral drugs.

It appears that the prevalence of the HIV and AIDS pandemic in Sub-Sahara Africa (SSA) is increasingly linked to the inability of a part of the population to achieve or keep up a sustainable livelihood. Poverty and food insecurity are key drivers of spread of HIV and AIDS, it follows that these need to be addressed in order to bring the pandemic under control and mitigate its devastating impacts (Verheijen & Minde, 2007). In SSA, people living with HIV and AIDS live in resource limited settings like the informal urban slums and are often unable to follow optimal food and nutritional recommendations for antiretroviral therapy because of lack of access to foods required (Castleman, Seuman-Fusso & Cogill, 2007). Currently, SSA is hosting the highest number of HIV AND AIDS affected persons and they are coupled by frequent food shortage (Swindale, 2004).

In Kenya, among adults 15-49 years, one in every five is infected with HIV and AIDS in urban and rural areas respectively. This has ranked Kenya to be one of the countries worst affected by the HIV and AIDS pandemic (National Aids Control Council [NACC], 2001). However, Kenya's HIV and AIDS prevalence has halved in a decade, a dramatic and sustained decline that has rarely been seen in Africa. This turnaround can be attributed to greater awareness and resulting behavior change as well as a lower incidence of new infections and higher death rates (NACC, 2008). HIV and AIDS related illnesses have caused death to 1.2million Kenyans. It is further estimated that 1.4 million Kenyans are currently living with HIV with 105,000 being children (NACC, 2009).

According to Ministry of Health [MOH] (2009) Nakuru Municipality hosts 22,564 people living with aids (PLWHA). Among them, a big number is poor and are living in the urban informal settlements (slums). They often experience food shortage. They are unable to link nutritional support to aids treatment since they do not have an access to quality food. At community level, most of them have come together to seek emotional and financial support through formation of support groups, especially the poor urban HIV and AIDS affected households. Nakuru Constituency Aids Control Committee [NCACC], (2009) states that there are 42 registered community based organizations (CBOs) in the Municipality and ten of them are support groups, whose membership are PLWA. *Badili Mawazo* self-help group (BMSHG) is an output of this endeavour. “Badili Mawazo” is a Kiswahili word meaning “change your thinking”. It is a name that HIV and AIDS support group in Nakuru, municipality has given itself. The name is meaningful on very many levels; to the founders of the group, they meant acknowledging their illness to family, to friends and community; challenging the stigma that attach those with the disease and taking a proactive role to meet their needs and improve their lives rather than depend on handouts. This is a psycho-social and welfare development group, with a population of two hundred registered poor urban HIV and AIDS affected households in Nakuru municipality. The members of *Badili Mawazo* support have come together to look for financial and emotional support.

At the beginning of 2006, collaborators in the Sustainable Environments and Health through Urban Agriculture (SEHTUA) project assessed the food and nutrition needs of people living with HIV and AIDS in Nakuru municipality. They implemented an urban agriculture intervention project which worked with eighty households through BMSHG to achieve improved food, health, nutrition and livelihood. Urban agricultural interventions were two; dairy goat keeping and production of African indigenous vegetables.

The group was trained before the introduction of vegetables. It was participatory based, since the project beneficiaries were allowed to choose conventional vegetables that they proposed for production, utilisation and marketing. High quality fodder planting materials include; sweet potatoes vines, Napier grass and expertise were sourced from Kenya Agricultural Research

Institute centre-Lanet. They were established before the arrival of goats. Also before the goats were brought a capacity building training workshop on dairy goat keeping was conducted.

Although the project implementers facilitated the provision of urban agriculture intervention free off charge all through out the project period, it is disheartening to observe that some of the urban poor HIV and AIDS affected households rejected the intervention. Others fall short of expectation in the adoption level of the intervention.

1.2. Statement of the Problem

The Sustainable Environments and Health through Urban Agriculture (SEHTUA) project implementers provided free training and production inputs such as dairy goats, land, vegetable seeds to the poor urban HIV and AIDS affected household in *Badili Mawazo* Support group. Despite of the project implementers making the dairy goats keeping and vegetable growing an easier option for HIV and AIDS affected households to improve their food security, health, nutrition and livelihoods, many had fallen short of expectation in the adoption levels(acceptance) of intervention. Project Implementer expected the HIV and AIDS affected households to embrace the intervention instead of them living on handouts but to their surprise some rejected the intervention. It is worthwhile to find out why some of the households accepted and others declined in taking it up and what are the factors affecting the adoption levels of this intervention.

1.3. Objectives of the Study

1.3.1. Broad Objective

The study examined the factors (sociological and project design related) affecting the adoption of vegetable growing and dairy goat keeping (urban agricultural interventions) among the HIV and AIDS affected households in Nakuru Municipality, Kenya.

1.3.2. Specific Objectives

- i. To assess the relationship between socio-cultural and socio-economic status of the poor urban HIV and AIDS affected households, and adoption of the agricultural intervention.
- ii. To evaluate the relationship between the urban agricultural intervention project design related factors and adoption of the agricultural intervention.

- iii. To capture an individual's social life history from poor urban HIV and AIDS affected households and assess its influence on the adoption of the agricultural intervention.

1.4. Research Questions

The current study answered the following questions:

- i. Does socio-cultural and socio-economic status of poor urban HIV and AIDS affected households affect their adoption of the agricultural intervention?
- ii. Is there a relationship between the urban agricultural intervention project design's related factors and poor urban HIV and AIDS affected households' adoption of the agricultural intervention?
- iii. Does the social life history of the participant in urban agricultural intervention from poor urban HIV and AIDS affected households have influence of the adoption of the agricultural interventions?

1.5. Justification of the Study

There is need to study more on the sociological context of the urban poor HIV and AIDS affected households which comprises of the social cultural and socio-economic and project related factors in order to enhance the adoption of the intervention. This is because interventions that link nutritional support to HIV and AIDS treatment are increasingly becoming recognised by donors, program implementers and clinical care providers. There is critical importance of integrated programs that provide services beyond clinical care for HIV and AIDS-positive individuals. Interventions in this particular study were; dairy goat keeping whose milk is easily digestible by the sick unlike cows' milk. The other one is, growing of African indigenous vegetables, which is a cheap source of vitamins to the HIV-positive individuals who are living in the informal settings in the urban with very limited resources.

The findings of the current study are expected to add knowledge in the areas of HIV and AIDS, urban sociology and urban agriculture. It contributes to the current debate of integrating nutritional support with clinical treatment for people living with HIV and AIDS. Also the experiences acquired from agricultural intervention as a strategy in mitigating the impact of HIV

and AIDS in urban areas will provide practical lessons for modifying program delivery of similar initiatives and else where in the world.

1.6. Scope and Limitations of the Study

The study was focused on low-income HIV and AIDS affected households who are members of BMSHG and were selected for urban agriculture intervention programme in the Nakuru Municipality area. It was limited to sociological variables; socio-cultural, economic and project related and it involved two categories of samples; for the survey and in-depth case studies respectively. This is because of inadequate funds, time and the study was structured to address specified objectives.

The study encountered some limitations. The nature of respondents, where majority of them were HIV and AIDS infected, and could have affected the total sample size due to mortality or bed ridden sickness status. For the case of such incidents, replacement was done by researcher to fill the gap left in the sample. Other respondents failed to provide adequate information as required due to conservativeness. To address this kind of limitation the researcher assured the respondent confidentiality before they were interviewed. Sometimes absence of the respondent for the interview was encountered. The researcher made call backs for data collection later. Despite the constraints, the study achieved its objectives by incorporating secondary data.

1.7. Definition of Terms

Urban Agricultural interventions-It is a set of defined agricultural innovations or technologies designed in the context of urban agricultural setting, as coping strategies to mitigate the impact of particular social phenomena in a social system. For the purposes of this particular study the technologies in question are the dairy goat keeping and the production of vegetables (Exotic and African Indigenous Vegetables).

HIV and AIDS affected households-This refers to a person or a group of persons living together under one roof, answerable to one head of household, sharing the same cooking arrangements and one or more of their members are HIV and AIDS positive. For the purpose of this study the term is applied to households which are participating in the urban agriculture intervention project in Nakuru Municipality.

Poor urban Household-This is a household in urban setting, which has attributes such as low productivity, food insecurity and low quality food if any, which is manifested by malnutrition among some members of the household mostly children and are living limited resources endowment. For the purpose of this study, it singled out the poor urban households that are HIV and AIDS affected.

Project related factors-This refers to factors that relate to the design of the project. For the purpose of this study these factors were issues like project period, organization of clusters, provision of training and farm inputs, location of the farms and the types of vegetables and livestock.

Socio-economic factors- Socio-economic perse is the relationship between economic activity and social life. Social economic factors often referred to as socio-economic are used to compare social life and economic activity. For this current study examples are such as education, income, Labour provision, source of income and employment.

Social cultural factors- Social cultural perse is belief and value systems, attitudes, acculturation levels. For this current study, social cultural factors such as; religion, ethnicity, gender, marital status and culture of the household respondent were used.

Social life history of the participant- It refers an individual past and current life profile which is based on the socio-economic and socio-cultural context one is brought up and living in a society. It has a linkage to the way an individual behaves towards social changes encountered in the concerned individual lifetime. For this current study it implied to the selected household's representative who participated in the six case studies conducted.

CHAPTER TWO

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1. Introduction

This chapter starts with covering the existing literature relevant to the study, by looking at urban agriculture in Kenya, types of intervention to mitigate the effects of HIV and AIDS, microfinance as a tool to mitigate the effects of HIV and AIDS, agriculture as a intervention to alleviate the impact of HIV and AIDS, characteristics of poor urban HIV and AIDS affected household and sociological factors influencing the adoption of urban agriculture intervention. The chapter further describes innovation–diffusion and rational choice theories, explain the manner in specific phenomena of adoption/adoption of innovations/interventions are relevant to the two theories. Lastly of all in the chapter, a conceptual framework is presented that depicts how concepts are interacted.

2.2. Urban Agriculture in Kenya

Urban agriculture is the growing of plants and raising of animals within and around the cities. In Kenya, most of the agriculture is undertaken in the rural with major components of crops and livestock. In urban areas, the poor practice some agriculture in smaller magnitude. It is not well recognized by the authorities. In fact, in the past cropping and livestock used to be destroyed or confiscated by the municipal or urban council in accordance with existing by laws. Despite this, urban agriculture is on the rise but there is no appropriate policy to this effect. Kenyan people carry along with them indigenous knowledge on livestock keeping and crop production to the urban areas when they migrate from the rural areas. Production of vegetable crops, for instance, kales, beans, tomatoes and livestock have become an integral component of urban lifestyle in major towns in the country. This is regardless of whether those practicing it live in marginal areas of the cities or the wealth in suburbs on large compounds. Urban agriculture may take place in locations inside the cities (intra-urban) or on land away from the residence (off-plot), on plate land (owned, leased) or on public lands. "Livestock follow human beings in Africa and people move with indigenous knowledge on their keeping" (Karanja, 2007 :1). Urban agriculture information available in Kenya does not indicate anything about the poor urban HIV and AIDS

affected households' development related to it, thus this current study was conducted in order to verify the outcome of it on the welfare of these households.

Foe ken and Owour (1999) argue that cultivation techniques practiced by farmers in urban and peri-urban, in Nakuru are very simple and productivity is low. They went further identifying lack of “modern” input, more expensive inputs like irrigation, chemicals and improved breeds as the major constraints in urban agriculture. Foe ken et al; (2002) found that in Nakuru town farming is one of the ways people employ to cope with problem of absolute poverty. The current study agrees with Foe ken et al., (2002) argument that the cultivation techniques practiced in urban was simple and farmers experience low productivity. Foe ken's study did not describe the characteristics of the urban farmers in Nauru Municipality, especially so the poor urban HIV and AIDS affected households which the current study has addressed.

2.3. Types of Intervention to Mitigate the Impact of HIV and AIDS on Affected Households

According to Barnett and Whiteside (2002) the impact of AIDS is so far rather poorly documented, which is not to say that there is not a multitude of mitigation responses, just that few of them are recorded and most remain at the communal or household level. The epidemic is a development crisis, which deepens poverty and increases inequality at every level, from household to global. We need better understanding of the long wave implications of this disease and think more than ‘coping’. The HIV and AIDS epidemic has social roots and as such, it needs social as well as medical and technical responses to control the pandemic and its devastating effects. This current study concentrated on social roots which have been reported through six narrative cases as an output of in-depth interviews.

Findings from Cooperative for American Relief Everywhere [CARE] (2004) clearly indicate that an intervention helps to promote economic development in HIV and AIDS affected communities and to reduce the economic vulnerability of affected households and individuals. According to NCACC (2009) a variety of interventions are practiced by support groups in the study area. They encompass agriculture, merry go rounds (informal microfinance) and income generating activities (IGA). It has been argued that most microfinance service programs are not structured to meet the needs of the affected households (CARE, 2004). Among the support groups in the study

area *Bandili Mawazo* group where this current study was conducted practiced merry go rounds (informal microfinance), although the study never documented that since it was not in the objectives.

2.3.1. Microfinance a Tool to Mitigate the Effects of HIV and AIDS on the Affected Households

Anderson, Gugerty, Levine & Weaver (2002) point out that providing small loan to the poor, is enjoying a sustained wave of popularity, although the global HIV and AIDS situation is worsening. Anderson et al., (2003) refers to Grameen Bank in Bangladesh as an example demonstrating the tremendous diversity of MFOs which popularized the group-lending model, in which member acts as each others co-guarantors, substituting social pressure and support for physical collateral. The more than two million borrowers are mostly very poor women, and loans are typically for one year period. NCACC (2009) states that most of the support groups in the study area are using ‘merry go round’ approach where a member contributes a specified amount of money per every meeting which is kind of saving for the group. Any willing member borrows or is loaned with an agreed interest which is later shared among the members as a profit. From the money borrowed members are able to enhance their IGA or start one.

Anderson et al., (2002) observe data on social and financial effects of lending to HIV-affected households are extremely limited. The need to examine microfinance within the context of HIV-affected populations will continue to grow, as the program manager looks for ways to counter poverty, social and economic devastation of the HIV epidemic. Barnes (2002) examined the burden of HIV and AIDS on microfinance and the effects HIV and AIDS-affected households in Zimbabwe. Based on his findings, he urged the donors to better understand how HIV and AIDS affects an MFO’s financial sustainability, risk, loan delinquencies, and to be supportive of new product development appropriate for HIV and AIDS affected households. Based on the current study’s findings, income from sale of vegetables and milk of dairy goats assisted the poor urban HIV and AIDS affected households to service micro-credit from K-Rep bank but little is documented. This scenario agrees with (Anderson et al, 2002).

In Kenya, the STD/AIDS Control Project of the University of Nairobi, and Improve Your Business–Kenya developed microfinance programs in 1999 that provide small loans, business training, and HIV and AIDS education to female sex workers. HIV prevalence rates were as high as 80 percent among those borrowers. One year after loan disbursement, researchers conducted a mid-term impact assessment. Out of the 209 enrollees of the project, 90 had left the program, and 6 women had died. Surviving microenterprises (representing about half of all businesses started) were concentrated in the trading of agricultural products and sales of second-hand clothes. Failed businesses were hindered by insufficient demand for services, client health problems, and household and family needs (Costigan et al., 2002) and Odek et al., (2002a,b). The findings of the current study support Costigan et al., (2002), and Odek et al., (2002a,b) results in that majority of the poor urban HIV and AIDS affected households relied on business for their household income; this is mainly petty business of selling agricultural products such as vegetables and porridge along the streets and roads within their residential estates.

There were, however, notable reductions in sexual risk behavior among the borrowers. Almost 20 percent of the women left sex work completely, and those who remained in the industry dramatically reduced their average number of clients. The level of sexually transmitted infections decreased among them, as did their average weekly income directly tied to sex work. At 18 months after loan disbursement, researchers conducted a program assessment. Half the microenterprises were stable, and the loan repayment rate was 72 percent. Illness and illness-related debt of some members negatively affected fellow group co-guarantors. Based on these findings, researchers recommended that MFOs operating in similar settings should explore offering a combination of loans and grants (Costigan et al 2002; Odek et al. 2002a,b). The current study findings concur with Costigan et al., (2002) and Odek et al., (2002a,b) in that agricultural intervention more less like the microfinance intervention to mitigate the effect on urban poor HIV and AIDS affected household exhibited paradigm shift in behavioral change.

2.3.2. Agriculture as an Intervention to Mitigate the Effects of HIV AND AIDS

Agriculture interventions have been used in rural and urban settings in many countries in the world as a positive coping mechanism among the HIV and AIDS affected households. Tissue culture bananas have been used significantly as a tool to mitigate the effects of HIV and AIDS

on food insecurity in Kenya (Nguthi, 2007). Findings from Pandey and Muliokela (2006) clearly indicate that smallholder dairy farming can act as a non clinical tool to mitigate the HIV AND AIDS effect and improved food security for the affected household in Zambia. They went further and contend that, there was improvement of milkⁱ consumption among the poor rural HIV and AIDS affected household mostly protein of higher bio-availability including selenium an important trace element to fight HIV and AIDS, increase income and disease tolerance. The current study findings support Nguthi (2007) since tissue culture banana is an agricultural intervention, although her studies were conducted in a rural setting. The current study agree with Pandey and Muliokela (2006) since majority of the poor urban HIV and AIDS affected households increased their household income and were able to have access to diversity of food and nutrition from the vegetables and dairy goat milk.

Lengkeek (2004) points out that HIV and AIDS has a devastating effect in sub-Sahara Africa. With most people living in the rural areas, HIV and AIDS has become a rural problem. It is therefore unlikely that the epidemic can be controlled without the effective support of agriculture, both in prevention and mitigation. His study found that agro biodiversity, including trees, in farming can be used for food security and nutrition, medicinal relief and income generation as being part of the local resource base of agro biodiversity. For the purpose of this study, it was expected that, if the HIV and AIDS affected households in the urban setting take up the intervention, they will improve their health through feeding on quality food and improve their livelihood through earning income from sale of vegetables, dairy goat milk and eventually become food secure in the context of HIV and AIDS. The researcher met his expectations since the current study findings revealed that majority of the households reported to have increased the household income since joining the agricultural intervention project tend to have embraced the intervention highly.

The study by Byron, Gillespie and Nangami (2006) found that intervention provided an important source of food support to the most vulnerable patients and their households, contributes to greater dietary diversity, and plays an important role in the emotional well-being of clients by lowering stress caused by insufficient access to food. This current study finding confirmed this. It was evidenced by the fact that majority of the sampled households benefited

through reducing stigma, raising their social status and enhancing scope of their friends out of embracing urban agricultural intervention to mitigate the effect of HIV and AIDS in their households. The findings further revealed that there is a significant relationship between social benefit accrued from embracing urban agricultural intervention and the level of adoption of the intervention.

Peacock (1996) argues that dairy goat is a simple and cheap micro-livestock enterprise. It has good returns. Unlike a cow it requires less feed, labour and small area to produce milk and meat. The farmer can dispose it for immediate cash need. He further argued that, goats' milk is more nutritive with valuable source of protein (including essential amino acids), fat, calcium, iron, phosphorous, and vitamins (including the important vitamin A). With proper milking and handling practices, goats' milk can be a highly nutritious food than cow milk. It is especially valuable for growing children, old and sick. The small size of the fat globules in goat's milk makes it easier to digest goats' milk than cow's milk. Some children who are unable to digest cow's milk can happily drink goat's milk and it is recommended for the sick and the old. Peacock's arguments on the cheapness in production of dairy goat turned to be an easy option for poor urban HIV and AIDS affected households, since they are living in limited resource settings. At the same time they require less labour intensive agricultural intervention which is compatible to their health status. This was confirmed by the current study findings, where majority of the poor urban HIV and AIDS affected households exhibited a high level of adoption of dairy goat an agricultural intervention. Majority of the households interviewed that embraced the two interventions, dairy goat and vegetable growing expressed to have sourced labour beyond self.

Literature has covered many advantages of dairy goat as simple and easy venture to a poor peasant farmer in the rural or urban but the sociological factors affecting the adoption of the intervention for urban households in the context of HIV and AIDS are not explained. The current study showed that there is a positive and significant relationship between the keeping of dairy goat as intervention to mitigate the effects of HIV and AIDS and the adoption of the intervention for the poor urban HIV and AIDS affected households.

According to Karanja (2007) kales and other African indigenous vegetables are cheap crops to grow in terms of labour and require little land space, just like the dairy goat keeping. They are also nutritious and provide vitamins to human beings. They can be useful and more profitable to the urban farmer if the adoption of the intervention is appraised. The current study supports Karanja (2007) and showed that majority of the households that expressed to have been growing vegetables indiscriminately, without considering whether exotic or indigenous exhibited to embrace the intervention highly.

2.4. Characteristics of Poor Urban HIV and AIDS Affected Household

Poor urban HIV AND AIDS affected household in Zimbabwe were more vulnerable to slipping into poverty. It has been argued that they have a lower monthly income, less income from their microenterprises, and fewer funds for medical care (Barnes, 2002). In Kenya, poor urban HIV and AIDS affected household has attributes such as low productivity, food insecurity and low quality food if any, which is manifested by malnutrition among some members of the household mostly children (NACC, 2009).

Most of these kinds of households are found in the urban slums. This agrees with Castleman et al., (2003) findings that in SSA, people living with HIV and AIDS live in resource limited settings like the informal urban slums and are often unable to follow optimal food and nutritional recommendations for antiretroviral therapy because of lack of access to foods required. This is further supported by this current study findings in the in-depth cases where all the interviewee in the six cases narrated the experience they had of food shortage before they embraced the urban agricultural intervention. All reported to have improved in food security, nutrition, health and livelihood and this was what this current study endeavoured to establish.

Population Reports by school of public health in USA (2002) maintains that, access to food in urban areas is dependent on cash exchange, with few exceptions, where urban food production contributes directly to household intake. Reliance on purchased food is a leading factor in household food insecurity of poor urban populations, who lack a fixed income. Although a wider variety of food is available, the food consumed in urban areas is not necessarily of superior nutritional quality and food safety is a growing concern in many urban environments. For the

purpose of this study, the researcher targeted the poor urban HIV and AIDS affected households who were in a support group in the study area. The current study found that, those who accepted the urban agricultural intervention and found it relevant to them were able to have food, improved in health, nutrition and livelihood.

Bukusuba et al (2007) found that, the undertaking of agriculture by PLWHA households was one of the positive coping mechanisms to alleviate food insecurity. The poor urban HIV and AIDS affected households situation was studied to find out whether the statuses of the urban agricultural intervention adoption play any significant role in improving their living standards. This current study confirmed Bukusuba et al., (2007) findings in that majority of the sampled households expressed to have increased their household income since they embraced urban agriculture and eventually acted as a positive coping mechanism to alleviate household food insecurity.

Findings from Bukusuba et al., (2007) clearly indicate that the HIV and AIDS pandemic has increased the inability of affected households, in Jinja municipal council in Uganda to put enough food on the table. Possibly because of the continued decreased productivity in these households and high expenditure on medical services. For these kinds of households to put food on the table the adoption of urban agricultural intervention has to be at high level, therefore the current study investigated the relationship between the factors influencing the adoption and the level of adoption.

The study by Nguthi (2007) argued that HIV and AIDS-affected households are mostly female-headed and have a significantly higher dependency ratio than non-affected households. Women in Kenya are particularly vulnerable to HIV and AIDS. In 1.1 million adults infected with HIV, twice as many women as men are positive. High rates of infection can be attributed to a combination of biological and social factors (NACC, 2008). Women are disproportionately affected by the AIDS, partly because of their economic insecurity and low social status, effectively targeting them with relevant technologies is ever more urgent (Verheijen et al., 2007). The current study supported Verheijen and Minde's arguments, in that majority of the poor urban

HIV and AIDS affected households in the support group who were interviewed were females and living with HIV virus positively.

2.5. Sociological Factors Influencing the Adoption of Urban Agriculture Intervention

The current study investigated sociological factors influencing the adoption which includes; socio-cultural, economic, and project related. Lionberger (1966) argued that the influence of cultural factors in farming stands out in clearest perspective when the behaviours of people with different cultural background are compared. In a study of the adoption of farm practices in Wisconsin, it was found that Danish farmers had taken up many more improved dairy practices than the Polish farmers. After examination of the philosophy and practices that prevailed in the countries from where they came provided likely explanation of the difference found. Another example of how cultural factors can influence farm operations and practices is the behavior of Amish farmers who are denied the use of telephones, automobiles, tractors for some purposes and electricity in the home because of religious convictions. By looking at extremes, such as these, it is easy to see how culture of people can be an important conditioning factor in accepting changes in farming (Lionberger, 1966).

It has been argued that adoption of a new idea or practice is the product of human interaction (Rogers, 1962). It is imperative that studies of adoption of farm practices have repeatedly shown that exposure to many and varied sources of farm information influence high rate of adoption (Lionberger, 1966). The current study findings supports Rogers (1962), arguments in that the poor urban HIV and AIDS affected households, participants of urban agricultural intervention benefited greatly in terms of reduced stigma, raised their social status and enhanced scope of friends out of human interaction. This social benefit accrued from participation in the intervention activities influenced adoption of the new ideas in urban farming.

Mungai (1985) reports that almost all social and cultural phenomena are interrelated in a complex manner. Therefore, for this current study consideration has been limited to socio-cultural, socio-economic and project related factors affecting adoption of urban agricultural intervention in context of HIV and AIDS. Each variable therefore was examined separately in

order to provide a direct focus on its relation with the adoption of urban agricultural intervention in the context of HIV and AIDS. The current study findings support Mungai (1985) in that the manner at which the participants of the intervention project interacted and related with each other, bearing in mind that they had diversified cultural background indicated no effect on the adoption of the intervention. This posed social and cultural phenomena; no participant adhered to the culture and religious beliefs as far as embracing the intervention was concerned.

Salim (1986) arguments, that adoption is a complex process, which is governed by many socio-economic factors including: farmers' socio-psychological systems, their degree of readiness and exposure to improved practices and ideas, institutional fact which acts as incentives/disincentives to agricultural practices and farmers resources endowments like landholdings size and labour are some of the factors of considerable importance in bringing about the technological change in agriculture. This current study was focused on the socio-cultural, socio- economic and project related factors appertain to adoption of dairy goat and vegetables intervention/technologies in urban and peri-urban for the individual HIV and AIDS affected households as they decide whether to take-up the potentially profitable agricultural intervention.

According to Rogers and Shoemaker (1971) a controversy exists between the relative importance of economic and sociological variables in explaining the adoption of intervention/innovation. The economists have claimed that, the rate of adoption of intervention can be explained by such economic variables as profitability, while sociologists claim rate of adoption can be explained by sociological variables such as compatibility. Rogers proceeds further and argues that most innovations/ interventions must be economically profitable for them to receive consideration by most individuals. But one of the most important variables affecting rate of adoption/ adoption, after the prior consideration of economic profitability is fulfilled, is the amount and nature of interaction related to the new idea. The interaction effect is the process through which individuals in a social system who have taken up or adopted an innovation/intervention influence those who have not yet taken up the intervention.

Rogers and Shoemaker (1971) arguments was applied to this study, as the sociological variables are embedded on the socio-cultural and socio-economic attributes of the members of BMSHG.

This current study found that prescribed intervention was compatible with the participants' lifestyle. It also found out that interaction within the group had any relationship with the adoption of the intervention.

Lionberger (1966) contend that people do not live apart from others and independent of their influence and argued that people are all members of many social groups or systems. This is a requirement for achieving desired ends for self and society. Lionberger further argued that a person, first of all, belongs to a family, whether a son, daughter, father, mother or other relative. In the same manner, small farmers may be reluctant to discuss farm matters with large farmers because of the social distance that may exist between them. This current study examined whether people with HIV and AIDS belonging to one common group have any relationship with the adoption of the urban agricultural intervention and found that, they influence each other in taking up the urban agricultural intervention. Also, through their interaction they are able to share and encourage one another where stress brought by loneliness is reduced.

2.6. Theoretical Framework

This sub-section describes the two theories; innovation-diffusion and rational choice and discusses how each has supported the study. Also, Synthesis of the two theories is described.

2.6.1. Innovation-Diffusion Theory

This model is composed of four basic theoretical approaches; each focusing on a different element of the innovation process. These are combined to create meta- theory of diffusion consisting of four components: the innovation decision process, the perceived attributes of the technology and the rate of adoption and individual innovativeness (Rogers, 1995).

The innovation decision process is characterized by five stages: knowledge, persuasion, decision, implementation and confirmation. In the knowledge stage, the individual or household is exposed to the innovation's existence and gains understanding of how it functions. However even after knowing about an innovation, individuals may need to be persuaded to use it because they do not regard it as relevant to their situation. The outcome of the persuasion stage is either adoption or rejection of the innovation. The implementation stage is when an individual puts an

innovation into use and the final stage is confirmation during which the individual seeks reinforcement for the decision made.

The study by Rogers (1995) identifies five attributes upon which an innovation is judged. These are relative advantage, compatibility, complexity, triability and observability. Relative advantage refers to the degree to which an innovation is perceived as better than the practice it replaces. Relative advantage is often expressed in terms of economic, social or other benefits. Compatibility refers to the degree to which an innovation is perceived by potential adopters to be consistent with their existing values and practices. Compatibility with what is already in place makes the new practice seem less uncertain, more familiar and easier to adopt. Complexity refers to the degree to which an innovation is considered as a difficulty to understand and use. If potential adopters perceive an innovation as complex, its adoption rate is low. Triability refers to the extent to which an innovation may be subjected to limited experimentation. Finally, observability refers to the degree to which the results of an innovation are visible to others.

This theory posits that innovation spread gradually over time and among people resulting in various adopter categories. The result is an adoption process that forms a normal S-shaped curve when plotted over time (Rogers, 1995). Rogers attributes this distribution of adoption to the role of information, which reduces uncertainty in the diffusion process. Based on this arguments Rogers has classified adopters into five categories: innovators, early adopters, early majority, late majority and laggards. Innovators are described as individuals who are venturesome, eager to try new ideas and take risk. Early adopters are described as the local opinion leaders in the system that function as the role models and are quick to see the value of innovations. Early majority is formed by the largest category. These people only make a decision when they are convinced of the benefits. Late majority are cautious and skeptical persons who do not adopt until the early majority has done so. They are usually the relative poor and are averse to risk. The last group of adopters is the laggards. They are suspicious of innovations and change agents. They are usually poor and seldom take risks. All categories of adopters were demonstrated in the current study findings, although they were not documented since the study objectives were not covering that.

The innovation diffusion model has several limitations. One of the major shortcomings of the model is that it generally assumes that the most important variable is the information and the willingness of the individual to change. An individual is characterized by his behavior without considering factors that influence his behavior. In reality many other factors are known to influence the adoption of an agricultural innovation. These include the farmer's objectives, the level of resource endowments of the individuals, access to resources, availability of support systems and the characteristics of the innovation. For example access to resource such as labour and land can limit the adoption of an innovation to a small number of individuals in a society. This applied to urban and peri-urban poor HIV and AIDS affected household whose labour and other productive resources are limited. Access to productive resources is also gender biased, with women having less access than men. In such cases an innovative individual may be labeled as a laggard while late and non-adoption is caused by lack of resources. Information and support services from the extension systems may also limit the spread of innovation by targeting innovators and early adopters while ignoring the others.

2.6.2. Rational Choice Theory

Rational choice is a choice made out of many alternatives through rational thinking. Rational choice theory makes several assumptions. First, it assumes that human beings are purposive and goal oriented. Every action taken is guided by a clearly identified goal or purpose. Theories of rational choice are guided by the assumption that people are rational and base their actions on what they perceive to be the most effective means of their goal. It involves weighing up alternative means to alternate ends and choosing between them. Rational choice theorists advocate that to understand more about how and why people behave in a certain way whether individually or socially then we have to see them as rational decision-makers in a world of scarcity.

Scott (2000) has assumed that people are motivated by money and by the possibility of making a profit. Sociologists and political scientists have tried to build theories around the idea that all action is fundamentally 'rational' in character and that people calculate the likely costs and benefits of any action before deciding what to do. This current study found out that the behavior of the poor urban HIV and AIDS affected household can be directed by this theory when making

decisions in the adoption of the intervention. Therefore with this approach in mind the theory of rational choice become relevant to this study based on assumption that the BMSHG members take up the agricultural interventions with multi facet of goals. These include: food, nutrition, health security and income generation. If through intervention one is able to meet his/her prescribed goals one take it up the intervention as a livelihood and resulted to acceptance of the intervention. Where one's goal was to generate income and after an attempt found that he/she was not getting profit he/she was to decide to reject the intervention.

According to Hedstrom and Stern (2001) most sociological rational choice theories assume that human being act rationally in a broad sense, and focus on the aggregate outcome that individual actors in interaction with one another are likely to bring about. The current study examined the outcomes that the individual HIV and AIDS affected household had attained from the adoption of the urban agricultural intervention.

2.6.3. Synthesis of the Two Theories

The theories of innovation–diffusion and rational choice complement each other in demonstrating the sociological factors affecting the adoption of agricultural interventions for the poor urban/peri-urban HIV and AIDS affected household. In the innovation decision process at the knowledge stage the individual or the poor urban HIV and AIDS affected household was exposed to the interventions existence in the BMSHG functions and gained understanding of how they functions and the benefits accrued to the other members in the intervention programme. At this stage they were able to weigh the relative advantage, compatibility, complexity, triability and observability of the interventions in order for them to accept or reject the interventions.

Rational choice theory complements the other theory because any decision made by BMSHG to accept or reject the intervention is guided by a clearly identified goal or purpose. Therefore, for the BMSHG members to accept or reject the intervention, rational choice theory stimulated the entire process for the individual member to make final decision.

2.7. Conceptual Framework

The model demonstrates that, urban and peri-urban poor HIV and AIDS affected households are subjected to independent, intervening and dependent variables which are factors affecting adoption, variables like Municipality by laws and adoption levels respectively (Figure 2.1). The sociological factors affecting adoption are further put into four categories i.e. socio-cultural, economic, project related and individual participants' life history. The model proceeds further illustrating how these fore mentioned variables influence the level of adoption in urban agricultural intervention for the poor urban HIV and AIDS affected households. The Socio-cultural variables include; gender role, religion belief, ethnicity, health status, household size and cultural value on dairy goat and vegetable growing. The socio-economic variables include; occupation, household income, employment status, education level and medical expenditure. Project related variables includes; supply of inputs, allocation of farms, period of the project, organisation of clusters and type of intervention.

Intervening variables in the model entails all the factors that influence the adoption of the urban agricultural intervention for the poor urban HIV and AIDS affected household and are not in the study. They include: government support of HIV and AIDS, and Municipality by-laws, CBOs and NGOs. These represent the extraneous variables of the study. Although they play significant influence on the adoption, this current study did not discuss them further.

The model showed the dependent variable i.e. adoption in three levels; high, medium and low. Dairy goats rearing and vegetables growing were the main focus of the study.

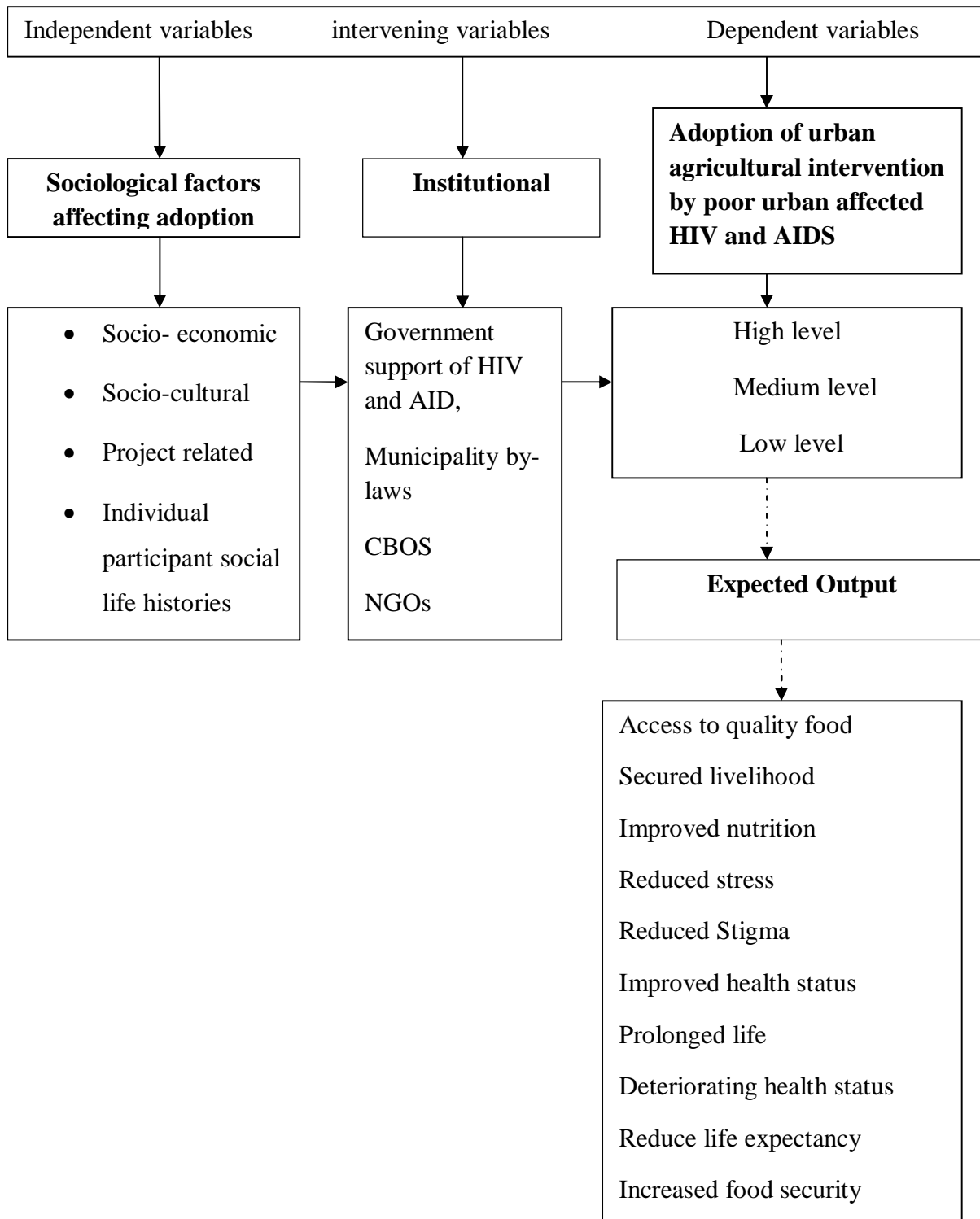


Figure 2.1 Conceptual Framework

CHAPTER THREE

METHODOLOGY

3.1. Introduction

This chapter describes the study area, research design, study population and unit of analysis. It proceeds further to illustrate the sampling procedure and source of data, method of data collection, ethical consideration protocol, operational definitions of variables, and data analysis.

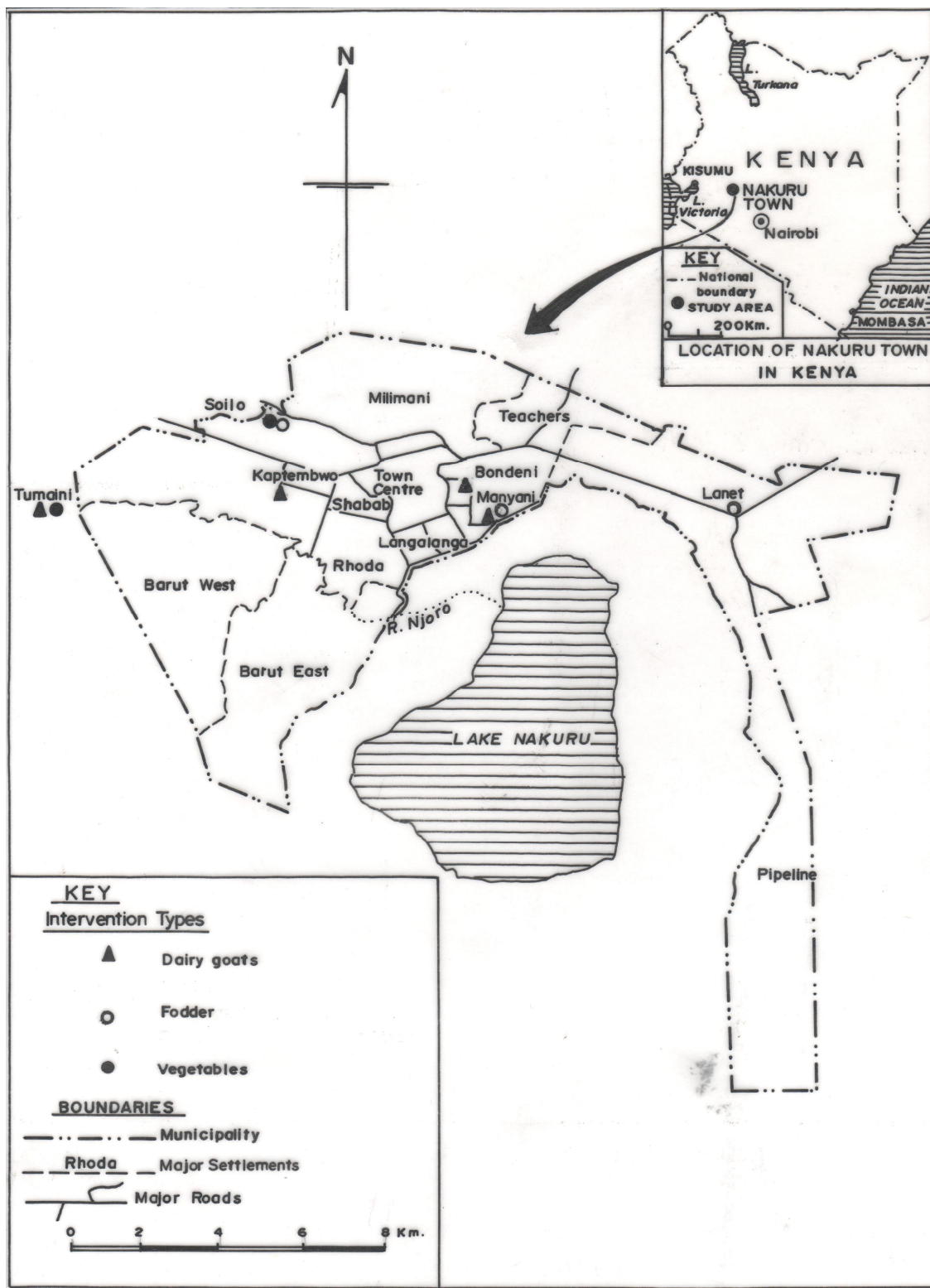
3.2. Study Area

It encompass; description of the location of area where the study was carried out in relation to its environs and in reference to Nairobi city, description of the number of support groups, population status of PLWA and list of hospitals dealing with care and treatment of HIV and AIDS in the study area.

3.2.1. Location of the Study area

The study was undertaken within Nakuru Municipality. Nakuru is a middle-sized Kenyan town with a multi-ethnic composition. It is located in the heart of the Great Rift Valley, at a distance of 160 km North-West of Nairobi. According to the Kenya Government Economic Survey (1999) Nakuru Municipality population stood at 239,000. This has increased to 326,000 people and holding position four among the largest populated town in the country (Kenya Government Population Census Report, 2009).

Map 1: Urban and Peri-Urban Agriculture Intervention Sites-Nakuru Municipality



Source: Nakuru Local Urban Observatory Project 2009

3.2.2. Support Groups for people living with Aids in Nakuru Municipality

According to NCACC (2009) there are ten support groups whose members are people living with AIDS (PLWA). These groups are; Badili Mawazo (BMSHG), Arise and Live, PGH CCC, Tumaini na Fadhali, Faws Women, Certified HBC, Copying Centre, New Life Agents, St.Trizah Children Home and Breast Feeding Mothers. Among them, 60% are on urban agriculture while the rest 40% are on micro finance activity as an intervention to mitigate the impact of HIV and AIDS. Among the support groups in the Municipality BMSHG had the highest registration of 200 HIV and AIDS affected households and had a well structured programme for urban agricultural intervention with the support from Urban Harvest-CIP initiative. *Badili Mawazo* support group had six sites/clusters (Map1), within municipality where the urban agriculture as an intervention were being undertaken by members of BMSHG. Households were allocated to a specific site, which is near to their respective residential area. The households that operated in a specific site were normally referred to as “cluster.” Precisely; Tumaini, “soilo”, Kaptembwa, Bondeni, Manyani and Lanet with different urban agriculture intervention. This study chose to work with BMSHG and Nakuru Municipality as the study area

3.2.3. Population of People Living with Aids in Nakuru Municipality

According to MOH (2009) Nakuru Municipality has a population of 22,564 PLWA. The initial intervention is care and treatment, where point of entry is HIV testing. At this stage, the HIV status is established. If positive, the Medical health department refers the individual for the treatment in the comprehensive care centers (CCC) which are health facilities listed (Table 3.1) within the Municipality. In the CCC their health status is monitored for a specified period time before they are put on ARVS. They are further linked to CBOs and NGOs for further care and support. These are the support groups like *Badili Mawazo* where they get support in different ways. For example, school uniforms for their children, school fees, feeding programmes, support for IGA and others social cash transfers.

Table 3.1: Number of people living with Aids in Nakuru Municipality

Status	Children 0-14 yrs		Adults>14yrs		Totals		Grand Total
	F	M	F	M	F	M	
PLWA on care	745	699	8,748	4,872	9,494	5,571	15,064
PLWA on ARVS	736	7	4,442	2,315	5,178	2,322	7,500
TOTALS	14,81	706	13,190	7,187	14,672	7,833	22,564

Source: MOH Annual report 2009

3.2.4. Hospitals dealing with care and treatment of HIV and AIDS

As an intervention in the prevention and mitigation of the effect of HIV AND AIDS in the study area, the department of health in collaboration with other stakeholders has come with health facilities offering care and treatment of HIV and AIDS.

Table 3.2: Health Facilities in Nakuru Municipality

Name of Hospital	Category	Status
Provincial General Hospital	CCC	GOK
Langalanga Health Centre	CCC	Municipality
Bondeni Maternity		Municipality
Bondeni Clinic		Municipality
Lanet Clinic		Municipality
Mirugi Kariuki Dispensary		Municipality
Nakuru West Health Centre		Municipality
Baruti Dispensary		Municipality
Kapkures Health Centre	CCC	Municipality
Prisons Dispensary	CCC	GOK
Department of defence dispensary	CCC	GOK
Valley Hospital		Private
Family option	CCC	NGO
Nakuru Nursing		Private
Baraka Martenity		Private
War memorial hospital		NGO
PCEA Nakuru West	CCC	FBO

Source: MOH Annual Report 2009

3.3. Research Design

Two research designs were employed in the study. First, cross-sectional survey design was used. Mutai (2000) points out that this kind of design allows collection of data from individual respondent only once. For this current study it involved the HIV and AIDS affected households'

participants' of urban agricultural intervention. The second research design employed in the current study was Case Study. This kind of design allows for in-depth probe into a single instance, where for this current study explained the participants' life histories impacting on the adoption of the urban agricultural intervention.

3.4. Population

The proposed “target population” or survey population was the 200 HIV and AIDS affected households who are members of BMSHG in Nakuru Municipality. This is the population the researcher generalized the results of the current study. The researcher observed Mugenda and Mugenda (1999) that population consistency supersedes convenience in research. According to Urban Harvest technical report (2008) BMSHG is a psycho-social welfare and development group with a membership of 200 households where 95% are women headed households and 5% are men headed households. Among the 200 members, 80 members were selected in 2006 for the urban agricultural intervention programme, which this study considered as the “accessible population”. Mugenda and Mugenda (1999) contends that it is often impractical to select a representative sample from the target population because it may be difficult to identify individual members, therefore drawing samples from an “accessible population” is appropriate since it is a more narrowly defined and manageable population. Based on Mugenda's argument, the current study drew the samples from the “accessible population” which was 80 households.

3.5. Unit of analysis

The respondents who provided the information (data) were drawn from the poor urban HIV and AIDS affected households and were participants in urban agriculture intervention project from *BMSHG*. Based on that fact, each participant came from a household and as such represented a household. Also the researcher considered a household as a unit of production and reproduction. On these bases, household become the unit of statistic analysis.

3.6. Sampling procedure and sample size

Probability and non-probability approaches were applied in drawing the samples and their sizes for the study.

3.6.1. Probability sampling

For the survey, all the 80 households participating in the urban agricultural intervention project had equal chances of being selected in the sample. Multi-stage sampling technique was used to draw a sample size of 62 households out of 80 households of BMSHG. Based on the fact that 90% of the *Badili Mawazo* self help group members were females and 10% males respectively. This applied to the sample of 62 households where from each household, one participant was interviewed. Therefore the sample comprised of 5 male and 57 female respondents for the survey.

Table 3.3: Gender composition of the household survey

Population	Male headed H/H	Female headed H/H	Total
HIV AND AIDS affected households in <i>Badili Mawazo</i> support group in the urban agricultural intervention project	5	57	62

Source: Household Survey data (2009)

3.6.2. Non-probability sampling

For the in-depth case studies, representative for social life histories of 6 households, which were drawn from participants in the agricultural intervention, based on a defined criterion. To capture gender aspect in the in-depth case studies two strata male and female-headed households were considered. The six participants were drawn from the four clusters; Tumaini, “soilo”, Kaptebwa and Bondeni (Table 3.4). The sample for the case studies was not random but was conveniently selected based on their performance in the urban agricultural intervention project and support group meetings attendance records held by the project management. The best performers were considered. Due to lack of adequate funding and time factor six in-depth case studies were considered appropriate to address the study objective.

Table 3.4: Sample composition of in-depth case studies

Cluster	Male headed H/Hs	Female headed H/Hs	Total
Tumaini	1	2	3
Kaptebwa	0	1	1
Bondeni	0	1	1
Soilo	1	0	1
	2	4	6

Source: Household Survey data (2009)

3.6.3. Sample size

A sample size of 62 households was used. Household was represented by one participant from urban agricultural intervention project. This was for the cross sectional survey. Another sample of 6 households was also used in the study. Just like for the survey a household was represented by one participant. This was for the case studies. Both samples were drawn from accessible population of 80 households were from poor urban HIV and AIDS affected households whose members were participants in the agricultural intervention project. For the former it represented 77% of the population. This agrees with Kasomo (2007) findings which state that for any reliable correlation observations the sample size is recommended to be more than 30% of the study population. For the later that it was used in the in-depth case studies, representative of social life histories of 6 households, which were drawn, based on a defined criterion. This agrees with Kasomo (2007) for case studies in qualitative research only one or multiple case can serve as an appropriate sample size.

3.7. Source of data

Both quantitative (numerical) and qualitative (words, phrase) data was sourced. A combination of data sources was employed. Primary and secondary data was used.

3.7.1. Primary data

Primary data was drawn mainly from the urban agricultural intervention participating households through the survey and in-depth case studies. Information on demographic characteristic of the household respondent, other variables such as socio-economics, social cultural, and project design related on urban agriculture and social life history of selected individual participants was

collected. Interview schedule and in-depth interview guide were used as the tools for collecting the data for the survey and case studies respectively. The researcher traversed through the identified households and conducted face to face interviews with various household heads (male or female). This involved the researcher interviewing the household respondents by use of the interview schedule. Before the interview the researcher could seek the oral consent from the respondent. If granted, the researcher proceeds with the interview but if otherwise move to the next household. The researcher assured the respondent confidentiality of the information they provided.

3.7.2. Secondary data

Secondary data was drawn from research articles, books, official statistical publications of the government including National Aids Control Council and organized groups like BMSHG through casual interviews. It was also sourced from relevant literature, on-line, and in the University libraries.

3.8. Data Collection

A combination of research tools were used to collect the data. For the survey, interview schedules were employed. Pretesting for both survey and case studies components of the research was done before the actual collection of the data. The results obtained from the pretesting assisted in correcting the anomalies in the tools in order to enhance validity of the tools and reliability of the results. Personal interviews were conducted with house-to-house visits. In the in-depth case studies interview guide was used where the investigator tape-recorded interviews for the case studies. This agrees with Mack, et al (2005) states that in qualitative research the investigator captures respondent's response through tape-recording.

3.8.1. Structured Interview schedules

Mugenda and Mugenda (1999) point out that an interview is an oral administration of a questionnaire or interview schedule. Interviews are therefore face to face encounters. The researcher found the tool to be more appropriate for the study since interview schedules guard against confusing the questions as the interviewer can clarify the questions thereby helping the

respondent give relevant response. The researcher employed interview schedule to capture primary data from the respondent in the survey phase of the research. Most of the questions were closed ended and open ended. To obtain accurate information through the interview, the researcher established a rapport with the respondents prior to conducting the interview. This was made possible, since the researcher worked with respondents in the urban agriculture intervention project for four month prior to the collection of the data.

3.8.2. Interview guide (unstructured interview)

The researcher employed interviews guide to collect in-depth data for the case studies, which was the second phase of the study. Unlike the questionnaires and the interview schedule, very sensitive and personal information can be extracted from the respondent by honest and personal interaction between the respondent and the interviewer. Also because of the open nature of the unstructured interview, probing is commonly used to get deeper information (Mugenda and Mugenda, 1999).

Tape recording method was used to record the respondent's answers. The information recorded in the tape was later transcribed and eventually each case was individually narrated and reported. Therefore, the researcher used the tool to get qualitative data from the respondents for the case studies.

3.8.3. Ethical consideration

According to Neuman (2006) sociologists have an obligation to ensure that confidential information is protected. The researcher sought permission from the relevant government authorities and ethical considerations were observed. Participants' right for privacy and dignity was observed. Therefore, before administration of the interview schedules and the in-depth interview the participant was required to give oral consent (permission from the interviewee) for the interview to proceed. Due to the publicity that the participants would get through the publication and wide dissemination of the findings, contact information from all papers, names of the respondents and participants in survey and case studies respectively were changed to conceal identity for the purpose of total confidentiality.

3.9. Operational definitions of variables

This aspect introduced a set of procedure/criterion that described the activities to be performed in order to empirically establish the existence of the social phenomenon with the key concepts that had been utilized in this study.

3.9.1. Urban agricultural intervention adoption levels

Table 3.1 presented the adopted measure of the adoption levels of the urban agricultural intervention, the response of the respondents who were drawn from the poor urban HIV and AIDS affected households were classified in three major levels; high, medium and Low based on the period one has practiced urban agriculture and stayed in the project, number of vegetable grown and scores awarded based on the fore mentioned criteria.

Table 3.5: Summarized profile of the urban agricultural intervention adoption levels

Adoption levels types	Summarised profile
HIGH ADOPTION	Participant who has been practicing urban agriculture for 24 to 36 months, has been in the intervention in the same period, has grown 7 to 10 different types of vegetable since joining the project, based on the above awarded scores of 25points
MEDIUM ADOPTION	Participant who has been practicing urban agriculture for 11 to 23 months, has been in the intervention in the same period, has grown 4 to 5 different types of vegetable since joined the project, based on the above awarded scores of 15points
LOW ADOPTION	Participant who has been practicing urban agriculture for 1 to 10 months, has been in the intervention in the same period, has grown 1 to 3 different types of vegetable since joined the project, based on the above awarded scores of 5points

Source: Household Survey data (2009)

3.9.2. Socio- economic factors

Socio-economics is a relationship between economics activity and social life. Social economic factors, often called socio-economic factors, are used to compare social life and economic activity. Also, social economic status or .socio-economic position describes a person's position in society using criteria such as income, level of education, occupation, value of property owned and so on. Measures of socio-economic status at the community level also exist. For this particular study, socio-economic factors included were; Age distribution, education level, household size, number of people with the virus, expenditure on medical care, household head

employment status, source of income, number of members contributing to income, background of agricultural experience, Labour provision, type of intervention with most comfort, impact of urban agriculture on household income and social benefits accrued from the intervention.

3.9.3. Social cultural factors

Social cultural factors exert their influence within a family structure in which parents mediate their children's behaviors for their adaptation to the wider social system. Examples of socio-cultural factors are belief and value systems, attitudes, acculturation levels. For this study, it was interested in examining the relationship of social cultural factors such as; religion, ethnicity, gender, marital status and culture of the respondent on the adoption level of the urban agriculture as an intervention to mitigate the effects of HIV and AIDS.

3.9.4. Social life history

The social life history of an individual is based on the socio-economic and socio-cultural context one is brought up in a society. It has a linkage to the way an individual behaves towards social changes encountered in the concerned individual lifetime. The study unfolded the respondents' social life histories through in-depth interview case studies and recoding the responses in a tape recorder and related to the adoption of urban agriculture as an intervention to mitigate the impact of HIV and AIDS.

3.9.5. Project design related factors

This refers to factors that relate to the design of the project. For the purpose of this study it refers to issues like agricultural intervention types, background of agricultural experience, choice on the type of vegetable, type of intervention with most comfort, the poor urban HIV and AIDS affected households were required by the project to take up in order to mitigate the impact of HIV and AIDS

3.9.6. Tool development and measurement

In order to ensure the validity and reliability of the study, the actual data aspect involved the development and employment of various data collection and analytical tools. This assisted to measure the relationship between the independent and dependent variable. The various indicators were captured by data collection tools developed and were measured through utilization of

specific analytical tools. Data for the case studies was used in enriching the explanations of the survey findings.

3.10. Data Analysis

At completion of data collection, data obtained from cross-sectional survey design was coded and entry techniques were put in use for every objective into a computer and analysed by use of SPSS, version 15. The research used both quantitative and qualitative analysis. The former included descriptive statistical procedures, which was employed to generate frequency tables, bar charts and pie charts. These were used to explain findings on the sociological variables influencing the adoption level of the agricultural intervention for the poor urban HIV and AIDS affected households. Inferential statistical procedure was also employed, where Cross tabulation, Chi-square, and Correlation techniques were used to analyse the degree of relationships and association between the factors and adoption level for the variables in question to, determine how they are related. Inferential statistics was tested at 5% significance level. For the qualitative analysis, was used in case studies, in-depth interviews were transcribed into interview transcripts and analysed by coding and organising it into themes and concepts (Mugenda & Mugenda, 1999). The six individual cases were compiled. The qualitative findings assisted the researcher to interpret and explain the complex reality of the given situation and any implication of the quantitative data.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1. Introduction

Results and discussions of the research are categorically presented in this Chapter. The area covered include; Socio-economics and social cultural status of the poor urban HIV and AIDS affected households, project design related factors, six individual social life history cases and relationship with the adoption level of urban agriculture as intervention to mitigate effects of HIV and AIDS. The results from the qualitative data are used to enhance the explanations of the quantitative findings obtained from the survey.

4.2. Results

The findings presented were generated out of the specific objectives; assessment and evaluation of the relationship between each category of factor; socio-cultural, socio-economic, project design's related factors and adoption of urban agriculture as an intervention to mitigate the effects of HIV and AIDS. Description of the social life history of individual poor urban HIV and AIDS affected households and the influence on adoption of urban agricultural intervention are presented. Subsequently the research questions were answered.

4.2.1. Demographic Characteristics of the Household Respondents

This sub-section focuses on the socio-demographic characteristics of the household respondents which encompass; Age, Gender for; Household respondent, Household head, Gender composition of persons with HIV-virus in a Household, Marital Status, Size of a Household, Education Level, Ethnicity and Religion in the study area. Apart from descriptive statistics presentation of these characteristics they are further related to the adoption level magnitude of urban agriculture by the HIV and AIDS affected households respondents, demonstrated by cross tabulation, chi-square and correlation statistics.

Age of the Household Respondents

The study findings in table 4.1 below demonstrated that, the majority (43%) of the respondents were within the age of 40 to 49 years. The average age was 42 years. The youngest was 27 years and oldest was 62years.The difference between the youngest and the oldest was 35years. As a measure of dispersion on the distribution of the age of the respondents, standard deviation of 8.9 was observed.

Table 4.1: Age distribution of the household respondents

Age in years	Frequency	Percent
Up to 29	6	10
30-39	18	29
40-49	27	43
50-59	7	11
60-69	4	7
Total (n)	62	100

Range 35, Minimum 27, Maximum 62, Mean 42, Std. Deviation 8.9

Source: Household Survey data (2009)

The study findings showed a correlation (r) of 0.253 which was significant at ($P < 0.05$). It implies that there is a positive weak relationship between the age of the household respondent and the adoption level of urban agriculture as an intervention.

Gender and Marital Status of the Household Respondents

This sub-section presents the results of the gender aspects of the respondents, that of the household head and household members with HIV virus. It proceeds further and presents results of the marital status of the respondents. Lastly, the relationship between the fore mentioned variables and rate of adoption of the intervention is presented.

Gender Distribution of the household respondent

Table 4.2 below indicate that majority (90%) of the respondents were females and (10%) were males respectively.

Table 4.2: Gender Distribution of the household respondent

Gender	Frequency	Percent
Male	6	10
Female	56	90
Total (n)	62	100

Source: Household Survey data (2009)

Gender of the Household head

Table 4.3 below show that, majority (73%) of the household heads was females and (27%) were males.

Table 4.3: Gender for the Household Head

Gender	Frequency	Percent
Male	17	27
Female	45	73
Total (n)	62	100

Source: Household Survey data (2009)

Table 4.4 shows that majority (88%) of female respondents in the intervention project were more likely to embrace urban agriculture than the male counterparts. High adoption level of the intervention was exhibited by the female respondents which are demonstrated by Pearson chi-square value of 0.793 with two degrees of freedom and significance level is 0.673. It implies that there is no significant relationship at $P > 0.05$

Table 4.4: The relationship between Gender of respondent and adoption level

Rate of adoption level	Gender of the respondent (%)	
	Males	Females
High	13	88
Medium	10	90
Low	0	100
Total (n)	6	56

$\chi^2 = 0.793$, NS, $P > 0.05$,

Source: Household Survey data (2009)

Table 4.5 below shows that majority (78%) of the females who were heads of their households exhibited medium level adoption of the intervention. This shows that χ^2 value is 6.852 with two degrees of freedom and significance level of 0.033. It implies that there is significant relationship at $P < 0.05$ between gender of the household head and the adoption of the intervention (Table 4.5).

Table 4.5: The relationship between Gender of household head and adoption level

Rate of adoption	Gender of the head of household (%)	
	Males	Females
High	50	50
Medium	23	78
Low	0	100
Total(n)	17	56

$\chi^2 = 6.852$, $P < 0.05$

Source: Household Survey data (2009)

Gender composition of household members with HIV virus

Majority (73%) of the households had one female household member infected with HIV AND AIDS unlike males who represented (37%) in the same category (Table 4.6).

Table 4.6: Number of males and females with HIV and AIDS infection in a household

No. of persons	Males		Females	
	Frequency	Percent	Frequency	Percent
0	35	57	7	11
1	23	37	45	73
2	2	3	7	11
3	1	2	3	5
7	1	2	0	5
Total (n)	62	100	62	100

Source: Household Survey data (2009)

Further, the research findings showed correlation (r) of 0.696 and 0.937 for males and females respectively. This implies that there is a strong positive correlation between the numbers of females infected with HIV and AIDS than Males and the adoption of urban agriculture as an intervention to mitigate HIV and AIDS effects.

Marital status of household respondents

Table 4.7 below indicate that, majority (39%) of the household respondents were widowed followed by married 27%. Those in separated category were 19% who were second from the last single 15%.

Table 4.7: Marital Status of the household respondents

Marital Status	Frequency	Percent
Married	17	27
Single	9	15
Widowed	24	39
Separated	12	19
Total (n)	62	100

Source: Household Survey data (2009)

The findings in Table 4.8 below demonstrated that the participants whose marital status was married (50%) were the majority in the high level adoption category. From the same table it can be observed that χ^2 value is 11.414 with six degrees and significance level of 0.076. Therefore, the study found that the relationship is not significant at $P > 0.05$.

Table 4.8: The relationship between marital status of household respondent and adoption level.

Rated adoption level	Marital Status (%)			
	Married	Single	Widowed	Separated
High	50	19	19	14
Medium	23	15	40	23
Low	0	0	83	17
Total (n)	17	9	24	12

$\chi^2 = 11.414$, NS, $P > 0.05$

Source: Household Survey data (2009)

Size of Household

The study findings revealed an average size of household of 6 persons per household. Majority (38%) of the poor urban HIV and AIDS affected households had 5-6 persons living in the same room and makes day to day decisions together, followed by 31% having 3-4 persons. The highest number of persons found in a household was 11-12 person who represented 3% of the total number of the households sampled (Table 4.9.).

Table 4.9: Number of persons living in a household in the study area

No. of People	Frequency	Percent
Up to 2	1	2
3-4	19	31
5-6	23	38
7-8	11	18
9-10	6	10
11-12	2	3
Total (n)	62	100

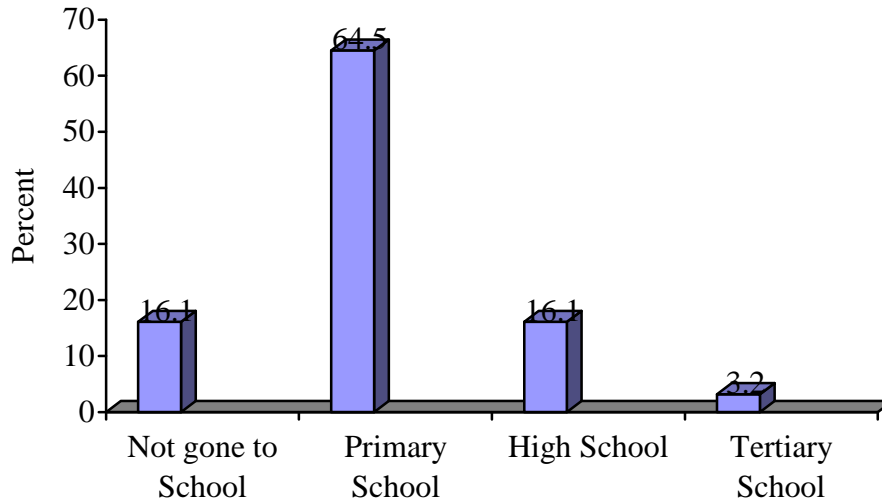
maximum 12, minimum 1, mean 6

Source: Household Survey data (2009)

The findings demonstrated a very weak positive correlation (r) of 0.094 at $P < 0.05$ for the number of persons living in a household and adoption of urban agriculture as an intervention to mitigate the impact of HIV AND AIDS affected households. It implies that the relationship is significant.

4.2.2. Respondents' Level of Education

Majority (65%) of the respondents reported to have attempted primary school education level as their highest education acquired followed by high school 16%. Those who expressed to have not gone to school were 16% and tertiary 3% (Figure 4.1).



Highest Education Levels

Figure 4.1. Distribution of respondents by their highest education levels

Source: Household Survey data (2009)

Table 4.10: Relationship between highest educational levels of the respondent and adoption level

Rate of adoption	Highest Educational Level (%)			
	Not Gone to School	Primary	High School	Tertiary
High	3	16	5	2
Medium	10	44	10	2
Low	3	5	2	0
Total (n)	10	40	10	2

$\chi^2=2.338$, NS, $P>0.05$

Source: Household Survey data (2009)

Based on the study findings in table 4.10 above, the respondents whose highest education level was tertiary were more likely than other mentioned education levels to have exhibited high adoption level for the interventions since the majority (44%) were in the Primary level category. The χ^2 value of 2.338 with six degrees of freedom and significance level is 0.886. This demonstrated that the relationship was not significant at $P>0.05$.

4.2.3. Ethnic and religious affiliation for the household respondents

This sub-section presents results for ethnic and religious affiliations and their relationship to adoption of the intervention.

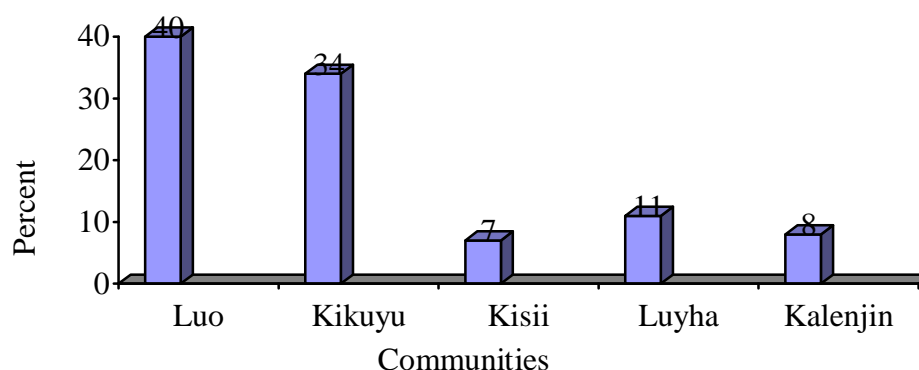


Figure 4.2. Ethnic Affiliations of the Urban Agricultural Intervention Participants

Source: Household Survey data (2009)

Figure 4.2 above present distribution of four ethnic communities in the urban poor population affected by HIV and AIDS in the study area. The majority (40%) were Luo followed by (34%) Kikuyu. Third position in composition was 11% held by Luyha. Fourth was held by Kalenjin at 8% and the least were Kisii at 7%.

Table 4.11: The relationship between Ethnic affiliation of the respondent and adoption level

Rate of adoption	Ethnic community (%)				
	Kikuyu	Luyha	Luo	Kisii	Kalenjin
High	50	6	25	6	13
Medium	33	10	45	8	5
Low	0	33	50	0	17
Total (n)	21	7	25	4	5

$\chi^2 = 9.435$, NS, $P > 0.05$

Source: Household Survey data (2009)

Table 4.11 above indicates that majority (50%) of the households exhibited a high adoption level belonged to Kikuyu ethnic community. This implied that kikuyu are considerably more likely to take up the intervention than those others. The χ^2 value is 9.435 with eight degrees of freedom

and significance level of 0.307. For that case, it is indicating there is no relationship between the two aforementioned variables in the population of the study.

Figure 4.3 below shows that majority (40%) and (40%) of the respondents expressed their religious believes allows them to drink goat’s milk and eat vegetables respectively. Based on the study findings, the respondents expressed their religious belief to have had no significant influence on the adoption of the urban agricultural intervention in the study area.

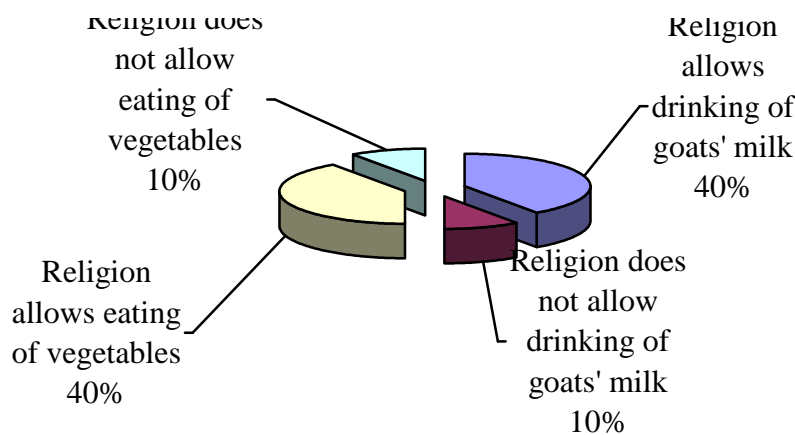


Figure 4.3. Religion and urban agricultural intervention practices

Source: Household Survey data (2009)

4.2.4. Cultural value of the household respondents

Table 4.12 below shows that majority of the respondents 100% and 97% had no cultural inhibitions in the keeping of dairy goats and growing of vegetables respectively. At the same time this study showed that respondents who expressed culture allowing drinking of goat’s milk to be 97% and 100% eating vegetables respectively. This was summarized, where it was asked as “does your culture allow you to rear dairy goats, grow vegetables, drink goat’s milk and eat vegetables respectively?”

Table 4.12: Culture of the household respondents

Cultural norm	Frequency	Percent
Culture allows dairy goat keeping	62	100
Culture allows drinking of goats milk	60	97
Culture allows the growing of vegetables	62	100
Culture allows the eating of vegetables	60	97

Source: Household Survey data (2009)

Most of the households (100 %) in the study area (Table 4.12.) had no cultural inhibitions in handling and utilizing dairy goat milk. This is evidenced by the fact that 97% of the respondents had no cultural problems associated with the drinking of goat milk.

4.2.5. Medical Care Expenditure and Household Heads' Employment status

Medical Care Expenditure per Household

The study findings revealed that, majority (34%) of each household was spending up to Ksh999 on medical care per month. The average amount spend by a household on medical care was Ksh985 while the lowest was Ksh100 and the highest expenditure reported was in the range of Ksh4000-4999 which represented only 2% of the household respondents sampled (Table 4.13).

Table 4.13: Amounts of money spent on medical care by a household per month

Expenditure (Ksh)	Frequency	Percent
Up to 999	31	50
1000-1999	21	34
2000-2999	5	8
3000-3999	4	7
4000-4999	1	2
Total (n)	62	100

Mean 985, Median 900, Minimum 100, Maximum 4000,

Source: Household Survey data (2009)

Based on the findings, the correlation (r) of 0.093 was observed. It implied that the relationship between the medical expenditure per household per month and adoption of urban agriculture as an intervention to mitigate the effect of HIV and AIDS was significant at $P < 0.05$. Although the correlation is weak.

Household Heads' Employment status

The findings showed that, majority (73%) of the households were not employed and only 27% expressed to have been employed (Figure 4.4)

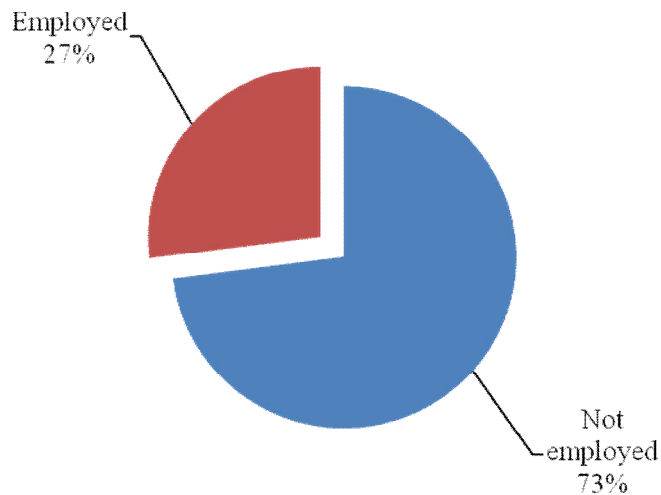


Figure 4.4. Employment status of household heads

Source: Household Survey data (2009)

The findings in table 4.14 below demonstrated that the households which had unemployed household heads are more likely than those whose household heads are employed to have exhibited high adoption level (75%). The χ^2 value is 2.833 with two degrees of freedom and the significance level is 0.243. This implied that the relationship is not significant at $P > 0.05$.

Table: 4.14: Employment status of household heads and adoption levels

Rate of adoption	Employment Status (%)	
	Employment	Unemployment
High	25	75
Medium	33	66
Low	0	100
Total (n)	17	45

$\chi^2 = 2.833$, NS, $P > 0.05$

Source: Household Survey data (2009)

4.2.6. Proportions of members contributing and source of their income

This sub-section presents results for proposition of household members contributing to household income and source of this income and their relationship to adoption of the intervention.

Proportions of members contributing to household income

The study showed that majority (64%) of the household respondents had more than one member of the household contributing to the income of the household, while 36% had just one member contributing to the income (Figure4.5).

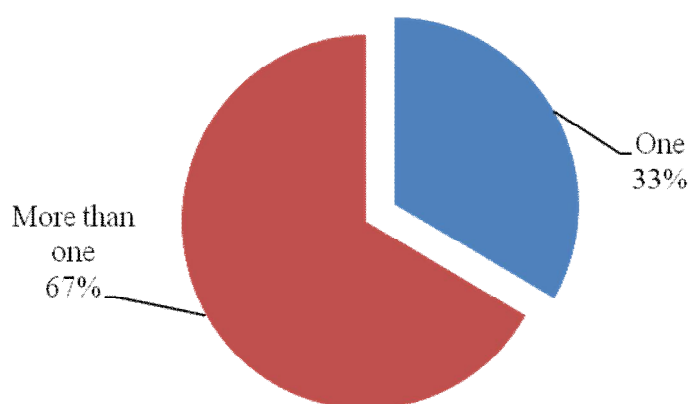


Figure 4.5. Number of people contributing to household income

Source: Household Survey data (2009)

Table: 4.15: The relationship between number contributing to H/H income and adoption level

Rate of adoption level	Number of households members contributing to income (%)	
	One	More than one
High	27	25
Medium	64	65
Low	9	10
Total (n)	22	40

$\chi^2 = 0.045$, NS, $P > 0.05$

Source: Household Survey data (2009)

Based on the study findings, (Table4.15.) there is unlikely to be a relationship between the two variables; although the household whose number of household members contributing to income

was one are more likely than whose members were more than one. Majority (27%) who exhibited high level intervention adoption belonged to households which had only one member contributing to the income. The χ^2 value is 0.045 with two degrees of freedom and the significance level is 0.978. This implied that the relationship is not significant at $P > 0.05$.

Source of household income

Ten different sources (Figure 4.6) of income were mentioned by the households. Majority of the households (39 %) relied on businesses for their household income; this is mainly petty business of selling merchandise in the streets, agricultural products such as vegetables and engaged in business activities such as hawking, making porridge, home baking, small scale home tailoring and basketry. The next highly placed source of income was employment in security firms (23 %) which is done on casual basis, washing clothes (8%) in the surrounding rich neighborhood, and urban farming (7%). These livelihood sources conflicted with urban agricultural interventions as they require time and people to be occupied full time.

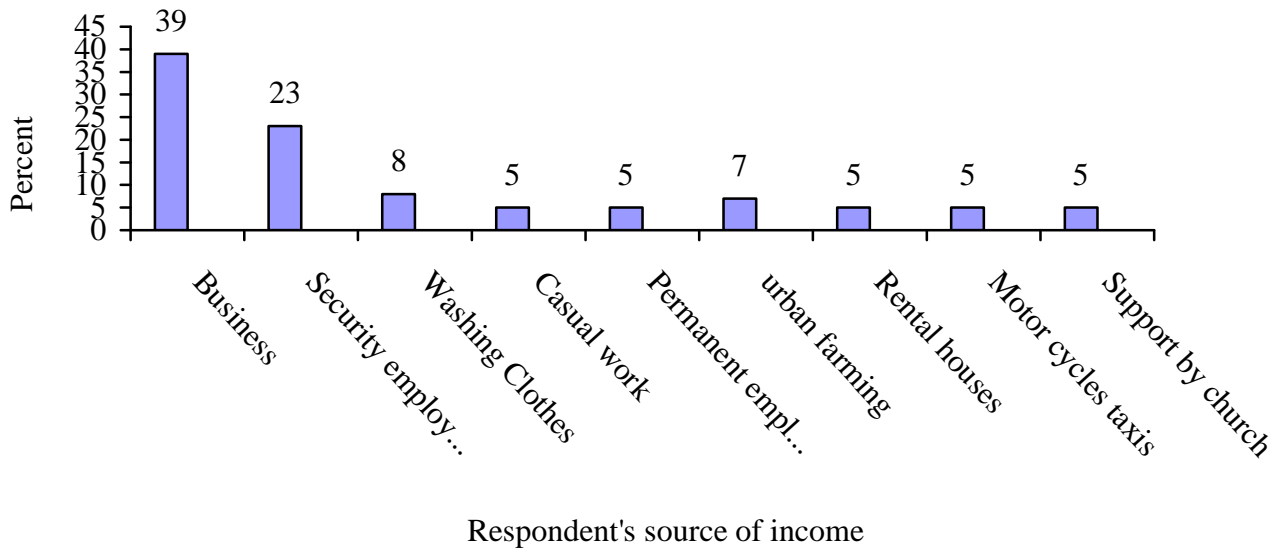


Figure 4.6. Sources of household income by the respondent

Source: Household Survey data (2009)

Based on the study findings, (Table 4.16) below shows that there is unlikely to be a relationship between the sources of household income and adoption of urban agricultural interventions levels; although the participants whose sources of household income was from motor cycle taxis and permanent employment; were more likely than those whose sources of income were from

business, security employment, farming, rental houses, casual work, support by church, washing clothes and permanent employment exhibited a high adoption level of 67% of the respondents. The χ^2 value is 17.489 with sixteen degrees of freedom and the significance level is 0.355. It implies that the relationship between source of income and adoption of the intervention is not significant at $P>0.05$.

Table 4.16: Relationship between urban agricultural intervention adoption and household income sources.

Rate of adoption	Source of household income (%)								
	Business	Security services	Motor cycle taxis	Urban farming	Rental houses	Casual work	Church Support	Washing clothes	Permanent employment
High	25	21	67	25	0	0	33	20	67
Medium	54	79	33	75	100	100	33	80	33
Low	21	0	0	0	0	0	0	33	0
Total (n)	24	14	3	4	3	3	3	5	3

$\chi^2=17.489$, NS, $P>0.05$

Source: Household Survey data (2009)

4.2.6. Provision of Labour for urban agriculture practice

Table 4.17 below presents two categories of sources of labour for urban agriculture practices. It was reported that majority of the household respondents never sourced labour beyond self which represented 84% of the household interviewed. Those who sourced labour beyond self were only 16%.

Table 4.17: Source of labour for urban agriculture practices

Source of Labour	Frequency	Percent
Self	52	84
Other	10	16
Total (n)	62	100

Source: Household Survey data (2009)

Based on the study findings, (Figure 4.7.) the majority (63%) of high adoption category participants sourced labour beyond self in the vegetable growing and eventually exhibited high adoption level unlike those who provided labour from self who exhibited only 38%. The χ^2 value is 34.279 with two degrees of freedom and the significance level is 0.00. This implied that there is significant relationship at $P < 0.05$.

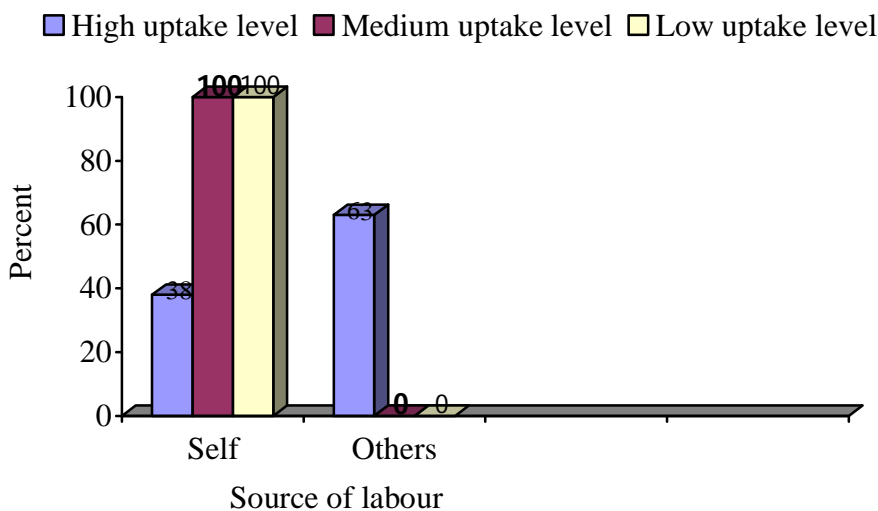


Figure 4.7. Source of labour and adoption levels of urban agriculture intervention

Source: Household Survey data (2009)

4.2.7. Background experience in agriculture and choice of urban agriculture intervention

This sub-section presents results for background experience of the respondents in agriculture and choice of UA and their relationship to adoption of the intervention.

Background of Keeping of chicken and dairy cows

Households which had a background of keeping dairy cows showed a correlation (r) of -0.310, $P < 0.05$) had a significant negative effect on the adoption of UA unlike of the chicken who had ($r = 0.210$, $P < 0.05$) a significant positive effect.

Choice of urban agriculture intervention in the project

The results showed that (Figure 4.8) the participants who were comfortable with dairy goats exhibited a high adoption level of 68% of the respondents, are more likely to take up the intervention than those who were comfortable with vegetable growing and those who did both. The χ^2 value is 7.180 with four degrees of freedom and the significance level is 0.127. This implied that the relationship is not significant at $P > 0.05$.

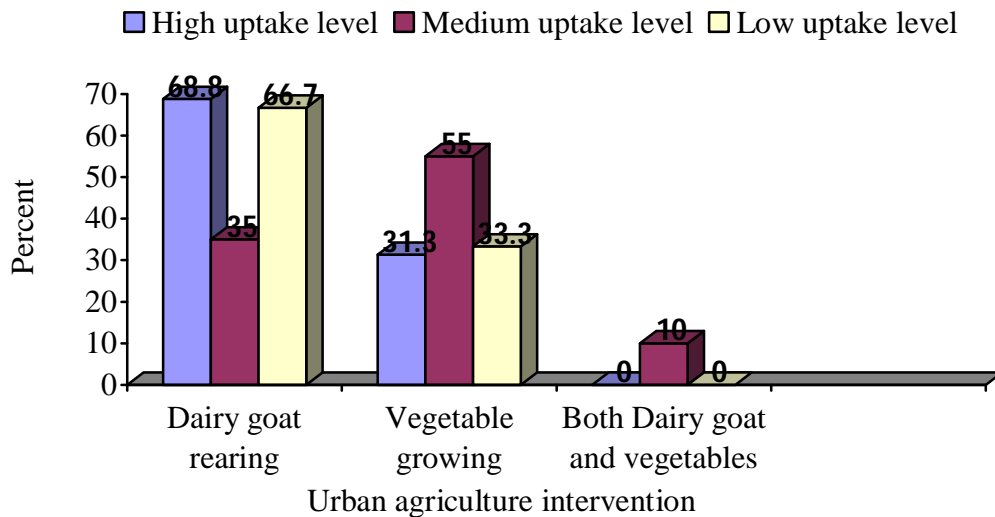


Figure 4.8. The urban agricultural intervention the communities were more comfortable with

Source: Household Survey data (2009)

Dairy Goat keeping as an intervention in the Project

The findings show a correlation(r) of 0.265 that is significant at $P < 0.05$. This implies that there is a positive and a significant relationship between the keeping of dairy goat as an intervention and adoption levels. Households that expressed to have wished to continue keeping dairy goat by their own tend to have taken up this particular intervention highly.

Vegetable growing as an agricultural intervention in the project

All types of vegetable in (Table 4.18) had positive significant correlation with adoption. The first three types of vegetables that exhibited the highest correlation were; Spinach, “mito”, cabbages with $r = 0.315$, $P < 0.05$. $r = 0.627$, $P < 0.01$ and $r = 0.614$, $P < 0.01$ respectively. This implies that the participants who were growing spinach which is an exotic vegetable embraced the intervention more highly than those growing other vegetables. This was indicated by correlation (r) of 0.315 which was significant at $P < 0.05$. However, the other vegetables demonstrated relationship with adoption but at lower significant level at $P < 0.01$.

Table 4.18: Type of vegetables in the project and the adoption

Variety of Vegetable	Correlation	Significant level
**Kales and adoption of urban agriculture intervention	.551	0.01
**Spinach and adoption of urban agriculture intervention	.315	0.05
**Cabbages and adoption of urban agriculture intervention	.614	.0.01
**Onions and adoption of urban agriculture intervention	.519	0.01
*Amaranths and adoption of urban agriculture intervention	.551	0.01
*Spider flower and adoption of urban agriculture intervention	.383	0.01
*Mito and adoption of urban agriculture intervention	.627	0.01
*Cowpea and adoption of urban agriculture intervention	.592	0.01
**Carrots and adoption of urban agriculture intervention	.606	0.01
**Cabbages and adoption of urban agriculture intervention	.614	.0.01

Source: Field data 2009, *African indigenous vegetables, ** Exotic vegetables

Choice of Vegetables to grow in the Project

Table 4.19: The relationship between Project Choice of Vegetables and Adoption level

Rate of adoption	Choice of vegetables		
	Exotic	Indigenous	Both
High	0	38	64
Medium	38	63	0
Low	100	0	0
Total (n)	21	31	10

$\chi^2=46.821$, $P<0.05$

Source: Field data 2009

The study findings (Table 4.19) show that households that expressed to have been growing vegetables indiscriminately, without considering whether exotic or indigenous in high level category tend to exhibited adoption level highly at 64% as the majority. The χ^2 value is 46.821 with four degrees of freedom and the significance level is 0.00. This implied that the relationship is significant at $P<0.05$.

4.2.8. Social benefits and impact of the UA on household income

This sub-section presents results for social benefits and impact of UA on household income and relationship with adoption levels of the intervention.

Social benefits accrued

Majority (50%) of the household respondents benefited through reducing stigma, raising their social status and enhancing the scope of their friends out of embracing urban agriculture as an intervention to mitigate the effects of HIV and AIDS in their households. This was followed by 26% which benefited from reduced stigma (Table 4.20.).

Table 4.20: Social benefits accrued from adoption of the intervention

Social benefit	Frequency	Per cent
Reduced stigma	16	26
Raised social status	9	15
Enhance scope of friends	6	10
All the above	31	50
Total (n)	62	100

Source: Household Survey data (2009)

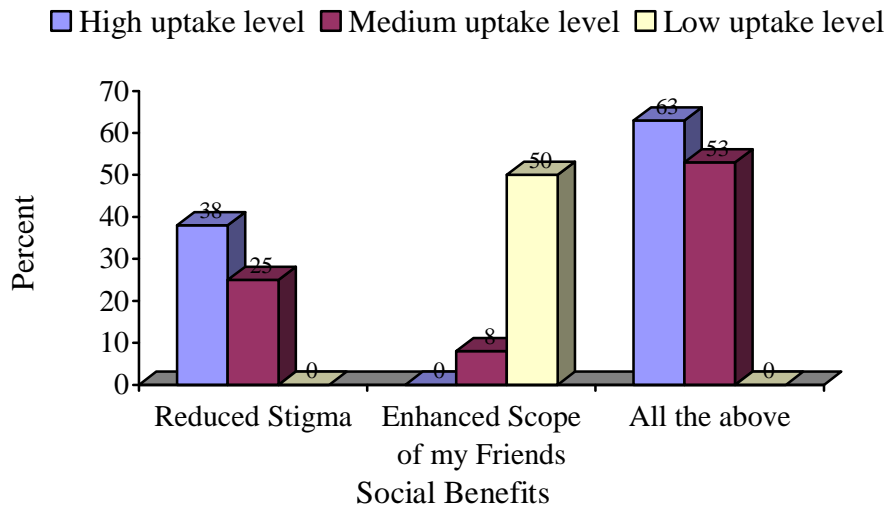


Figure 4.9. Social Benefits accrued from the urban agricultural intervention project

Source: Household Survey data (2009)

From the above Figure 4.9, majority (63%) of the participants expressed to have benefited socially from the project through; reduced stigma, raised social status and enhanced scope of friends since joining the intervention project tend to have taken up the intervention highly, than the households which expressed to have benefitted from an attribute such as reduced stigma alone. The χ^2 value is 25.315 with six degrees of freedom and the significance level is 0.00. Implies the relationship is significant at $P < 0.05$.

Magnitude of impact of the urban agricultural intervention on household Income

Table 4.21 below shows that, majority (81%) of the respondents increased their household income since they embraced the intervention as mitigate to the effects HIV and AIDS on their households.

Table 4.21: Status of household income since joining the UA intervention project

Status of income	Frequency	Per cent
Increased	50	81
Remained stagnant	12	19
Total (n)	62	100

Source: Household Survey data (2009)

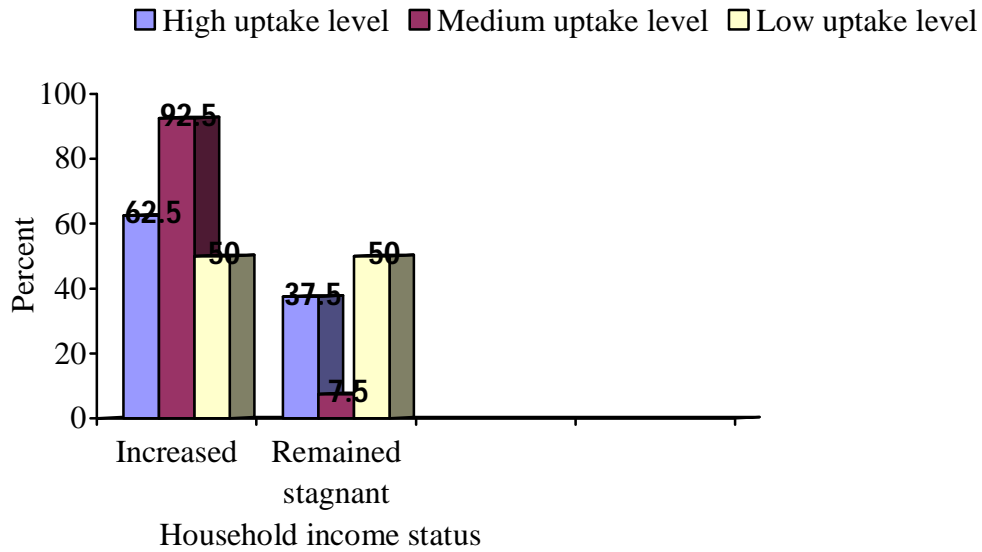


Figure 4.10. The effect of the urban agricultural intervention on household income

Source: Household Survey data (2009)

The research findings (Figure 4.10.) demonstrated that, majority (63%) of the participants expressed to have increased the household income since joining the intervention project tend to have taken up the intervention highly. The χ^2 value is 10.587 with two degrees of freedom and the significance level is 0.005. Indicated that, there is a relationship between the two variables and is significant at $P < 0.05$.

4.2.9. Case Studies

In this sub-section six case studies are presented which demonstrate the effect of the participant social life history on the adoption of the vegetable growing and dairy goat keeping as an intervention to mitigate the impact of HIV and AIDS in their affected households. The first case presents a former military man living with the HIV and AIDS and describes how he got infected with the virus. He proceeded further and explained the far urban agriculture has been the source of livelihood for his household. The second case discusses an Aids elderly woman of multiple husbands living with a daughter and son who are both HIV and AIDS positive and the way urban agricultural intervention has been a source of food, nutrition and income for her household. Third case present an elderly woman who kept on blaming her mother because of the HIV and AIDS conditions that she was in and proceeded further to discuss how urban agriculture has provided source of food and income for her household. The fourth case presented a woman who lived with HIV and AIDS, described how she survived from the leftovers from the open air markets to feed her dairy goats. The fifth case discussed a medium aged woman with AIDS and how she was disowned by her own family when she tested positive and the way urban agriculture intervention had improved her health and income of her household. Finally the sixth case presented Aids infected man who lived with a wife who tested negative described how urban agricultural intervention had tremendously contributed to the welfare of his household.

Case Study 1: A former military man living with the HIV and AIDS

James¹ was born in 1956 in Nyanza, Kenya. He belongs to Luo ethnic community. He was, brought up by both parents. The parents were subsistence farmers in the rural area but in the early year his father was a military man. James's mother was ever a house wife. He was born in the second position in a family of two sisters and him as the only son making a total of three. One of the sisters died out of Aids and left one grandson who is taken care of by James.

James's highest level of education is class seven in primary school. His school life was okay but his father never liked education as such he pushed James to join Kenya National Youth Service (NYS) in 1974 where he trained for two years as a military personnel. After the training he

¹ Real names have been concealed for ethical reasons

joined the Kenya Army where he later got involved in a coup and was detained. Luckily enough he was released from prison by the presidential decree. James could not be reinstated to the army. He got a job in Nairobi city, where he worked as a security guard in a large company where they used to guard Telecom Kenya properties. A Luo lady whose husband had opened a medical clinic in Nakuru approached him to work in the husband's clinic as a night security guard which he agreed. One night while guarding the clinic, some thieves broke in the premise and this incident landed him to jail. After completing the jail term, James joined his parents in the rural home in Nyanza where he found his father very sick. Since he was the only son, he decided to stick at home to take care of the old and sickly parents. Unfortunately after a short while the sick father died. James got married when he was thirty years old to a wife who was twenty nine years old. The wife was more educated because she was a Form drop out. By the date of this in-depth interview James was residing in a slum estate known as Kaptebwa, in Nakuru municipality where he has rented semi-permanent, single room, with electricity but no water. He lives with his two sons who are Adults; his wife occasionally comes from the rural area and a daughter who had just completed class eight. Among the children he lived with, nobody among them contributes to the house income except James who was the sole bread winner. He worked as a community volunteer before Urban Harvest intervention project came to his rescue.

James has been living in Nakuru for the last 9 years. While running some business there, he developed a relationship with a girl; she was a daughter to the owner of the plot where he had rented a room. The girl started falling sick now and then. The illness prolonged and she exhibited a consistent dry cough which would suggest a TB infection. At long last she was tested and ended up being HIV positive. One day she visited James where he was doing a business of selling soda. She insisted she had a special message for him. They went to the house where she disclosed to him that she was HIV positive and she suggested it was good for him also to go for the test. He was perplexed but he decided to heed to her suggestion by going for the test where he was found to be HIV positive. In the hospital he was counseled and he was advised to join Love and Hope, a local catholic based home care which was taking care of people living with HIV virus. This was back in the early 2005. He got training on home basic care and sponsored for another one week course on income generating projects in Nairobi. After that training he had the courage to talk about his status to her wife, children and neighbours. When they grew in big

number at 'Love and Hope' centre, they felt they should split and form a split group known as Badili Mawazo.

In August, 2005 Professor Nancy Karanja and Mary Ngenga both from CIP-Urban Harvest were looking for support group like 'Badili Mawazo'. They introduced to them issues of urban agriculture which they nurtured together. Based on the training that he had acquired on income generating, he had an appropriate time to preach the gospel to the group members who majority were women from poor urban HIV and AIDS affected households. According to Luo culture, James confessed that,

We men do not drink goats' milk and goats are regarded as women livestock. Also some vegetables like spider plants are specifically for women, but in urban and in the condition we are in we tend to believe that we are not bound by those cultures and we eat and drink what the culture prohibits for our own good, he said. Through this programme he has been able to acquire a goat as an asset.

James is a Christian and specifically a Catholic by faith but it has no problem with his status and it has no inhibitions in the rearing, growing and eating all types of vegetable or livestock they have in the project.

In the project James had been able to learn the following skills; growing vegetables on small area around his rented room using a technique known as multistory, Agronomical practices as regards to growing of different kinds of vegetables i.e. Exotic and African indigenous vegetables, packaging of vegetables in readiness for market. He acquired a lot of knowledge in food and nutrition which has down trickled to his members of the household. Therefore as a poor urban HIV and AIDS affected household and living within limited resources in the informal settlement James's household has been able to enhance their food security status by feeding on different varieties of vegetables they got from the project pieces of land within the municipality and they could sell extra harvest for income. James has also learnt the husbandry practices of rearing dairy goats. Out of the benefits got from the urban agricultural intervention James's health status has improved since he has been able to integrate clinical treatment with good food and nutrition in combating the impact of the HIV and AIDS.



Plate 1: Urban vegetable growing training session on multistory technology at Tumaini cluster site on 5/7/2007

Beside acquiring a goat and learning other skills in urban agriculture, James who felt discriminated by many friends because of his positive status has acquired a lot of friends as he has been able to share with them the vegetable he gets from the project. This has enhanced his scope of friends since he has something to share with them. The income he obtains from sale of vegetables has enabled him to improve the welfare of his household. In one of the in-depth interview session the researcher asked James what he understood by the term balanced diet, “I believe if I eat well I will live long and a healthy life like any other person who is not HIV and AIDS positive”, he answered. James has lived positively with the virus since 2005. He is determined to live like other people as long as he is feeding well and taking the antiretroviral drugs appropriately. But he kept on repeating, “Those who know their status should not spread the virus to those who know their status to be negative and nobody should claim he/she is not positive unless proved other wise by undergoing a HIV test,” he said.

James’ story demonstrates that, he had background experience in agriculture since he was brought up by parents who are farmers in the rural areas and such he embraced the dairy goat

keeping and growing of vegetable as a copying strategy to mitigate the effects of HIV and AIDS. Also, it shows clearly that he was able to improve in accessibility to food, nutrition, health and general livelihood of his household which was the objective of the urban agricultural project.

Case Study: 2 An AIDS elderly woman with multiple husbands.

Sarah², was born 52 years ago at “Kambi ya Moto”, a village in Rift Valley, Kenya. Her ethnic community is Turkana. Her father was a “Nyapara” in the white settlement sisal estates at Mugutio. She is a mother of six kids from different fathers. Sarah’s mother was the third wife of his father and the only child of her mother. The mother died of breast cancer when Sarah was 13 years old, by this time people believed that she was bewitched since they were not aware of that kind of a disease. Sarah had the same problem (breast cancer) when she grew up but because of cancer awareness she went to the hospital early and she was treated. Due to the death of her mother Sarah had no chance to get education at all. During those early days she stayed with her step mother for some time but she was hardly happy because that step mother kept on mistreating her. An aunt got concerned and took her in with her where she grew up in her home.

Sarah got married to the first husband as a second wife when she was 20 years old. She gave birth two kids with the first husband. One of the kids died when young. Unfortunately her husband too died around that same time (1992). The first wife to her husband took the wealth of the husband and she had no alternative but to get married to the second husband who was a night security guard with one of the supermarkets in town, and they were staying together even this time of this in-depth interview.

Sarah started falling ill now and then. She was admitted two times in Nakuru Provincial General Hospital out of major wounds which were consistent on her legs and her hearing ability was impaired. Since the sickness persisted, the doctors requested Sarah to be tested for HIV which she agreed. The results came out positive and when it was revealed to her the results out of that she becomes more sick to the extent that her husband was feeding her like a child using a tea spoon. More counseling was done and she came to admit her condition and now she is okay.

² Real names have been concealed for ethical reasons

When leaving the hospital, she was referred to Love and Hope, a Catholic faith based HIV and AIDS care centre in Nakuru municipality. She felt healed when she met other people with the same problem. They came up with a support group for people living with the virus known as Badili Mawazo in Nakuru Municipality where she was trained in agronomical practices of vegetable growing.

Through Badili Mawazo she was accessed by CIP-Urban Harvest which introduced her to crop production and animal husbandry practices of a dairy goat. They rented undeveloped plots in urban and peri-urban land and were able to grow exotic and African indigenous vegetables. They were also given dairy goats which they managed in groups. Apart from the long terms skills, Sarah got a dairy goat as an asset from Urban Harvest. Also as a support group, K-REP bank Nakuru branch trained them how to start a small business and they lend them money which they could pay after selling vegetables and dairy goat milk.



Plate 2: A member of Badili Mawazo at her kiosk with friends, selling vegetable from urban agriculture intervention project at Manyani cluster site on 5/7/2007

The skills she acquired from urban agriculture intervention project were long term and eye opener to Sarah and her household because she even started growing vegetable next to her house and she can feed her family and sell the extra in her Kiosk near her rented room which she had started from a micro credit from K-REP bank.

Sarah's household is one of the poor urban HIV and AIDS affected household; she resides in a single rental house at Kongolaya estate next to Bondeni, a major slum in Nakuru municipality with her husband who is HIV negative with two children a boy and a girl who are both HIV positive under antiretroviral drugs. The eldest son is married and lives in "Kambi ya Moto" which is 30 kilometers from Nakuru town. He could help Sarah's household but his family was hard hit by the 2007 post-election violence which left him with nothing since his house was burnt to ashes. Therefore, Sarah's household relies on the meager salary of the husband who works with night guard security services and the little she gets from the vegetable sales.

Sarah's story demonstrates that, she had no hope in live but the urban agricultural interventions (dairy goat and vegetable growing) restored hope in her. This is because she was able having food for her household, reduced stress since she was able to share with the other members of the support group and finally she improved in health, nutrition, and livelihood. Based on her narrative, she embraced the intervention highly since it assisted her to mitigate the impact of the HIV and AIDS.

Case Study: 3 "My mother is the cause of all this mess I am in today"

During the in-depth interview, now and then a minute could not elapse without Elizabeth³ blame her mother for all what she is today. She kept recalling how good she was in class but her mother's carelessness made her to lose her potentiality in the drain and landed to be one of the HIV positive mothers. Elizabeth is a mother of three, elderly and weak. Elizabeth was born in Murang'a District in central Kenya from a monogamy family of eleven children. At the time of in-depth interview she was in her fifties. Kikuyu is her ethnic community. While still young she migrated with her parents to Dundori village in Nakuru, after sometime they shifted to Bahati in

³ Real names have been concealed for ethical reasons

a village known as Nyangwisi, where her father died in 1966, and they were left with their mother to bring them up. Before the father died they had enrolled for allocation of land for resettlement programme in a place known as Marumarnet in Laikipia District. Successfully they got thirty five acres of agricultural land. This is the place Elizabeth was brought up to standard three.

During the interview Elizabeth confessed that her family was poor and even today they are poor because her mother indulging herself in illicit brewing activities.

My mother was a daily drunkard woman”, She recalled, “When my father died our mother was left with the responsibility of bringing us up, with huge piece of land where we could practice agriculture for our livelihood but she mismanaged the farm and started brewing illicit brew to generate income, Elizabeth¹ said.

The brewing business subsided with time and there was no income out of it. My mother started selling the farm in small pieces until the entire farm was sold. This scenario affected us so much that out of a family of ten, the person with the highest education level reached standard seven in primary school. This life of drunkard mother exposed us to so many immoral behaviour. “This kind of life was horrible since we could see men and women having sexual relationships indiscriminately out of drunkard behaviour”, she said.

As a family we were living in a three roomed house and sometime it was very embarrassing where my brother could get annoyed with the men who were having sexual affairs with my mother in the broad daylight. He could beat them and chase them away and my mother could start crying and complaining to my brother. “Our mother had no time for us since she was ever drunk.”

In school life Elizabeth never wore shoes, personal attires like petticoat, under wears was unknown to her. She was forced into marriage while she was in standard six at age of 15years because of the domestic problems in her family. She met her husband who was from a Kalenjin ethnic community while they were both casual labourers in a sisal estate farm in Solai which is 15kms from Nakuru town. They gave birth to three children. While they were there, Elizabeth started having family indifferences with her husband. This led to their separation, and she migrated with her three children to come to live in Nakuru town. She started a business for

selling clothes. The business committed her so much that she had no time for the three children. “They developed bad character out of peer pressure since i was not available for them”, she said.

Elizabeth is not sure when she contracted the virus. She started falling ill frequently in 1997. Since she had money as business lady she could seek treatment from Private hospitals which drained a lot of her business stock. All was not alright. When the sickness persisted she thought that she was bewitched and as such she felt it was wise to visit a witchdoctor man where she thought it was her husband who might be behind her sickness. Out of the prolonged illness her business collapsed. Lastly she was taken by her relatives to a mission hospital where they persuaded her to undergo HIV test which turned to be positive, this was in 2003. Elizabeth became crazy since she confessed that she knew herself as a woman of one man who was her husband. She abused the doctor who revealed to her the results since she could not accept that she was positive.

Unfortunately I had vowed not to have any sexual relationship with any person since I separated with my husband, she said. I thought the disease was for the other people like commercial sex workers, not for people like me. When people came to know my status, they could refuse to greet me by hand. Even in the church nobody could have liked to seat next to me, I really felt discriminated against, she said.

Where Elizabeth resides in town her neighbours do not know her HIV status. It is only her friends whom they attend the support group meeting together who know her status. By the time of this interview, Elizabeth had accepted her condition and was living positively under antiretroviral drugs. Although they separated with husband Elizabeth acknowledges that sometimes he visits her in Nakuru and he is also under antiretroviral drugs. The husband lives with another wife in Eldoret which is 250 kms from Nakuru town.

After counseling from the hospital, she was referred to Love and Hope home care centre, a local Catholic faith based in Nakuru municipality by that time. From Love and Hope, the Badili Mawazo support group was formed and eventually they became independent from the home care centre. They were hosted by Nakuru West Presbyterian Church of East Africa (PCEA) where they could hold their meetings in the church compound on every Friday. The CIP-Urban Harvest team and the church started supporting them in different capacities. The interviewee acknowledged that sometime when Mr. Mbugua, the project coordinator could be travelling abroad he collected their beads which they were making as a group and sold for them. The

Church pastor could do the same, since the market there was better. Sometimes, we could receive visitors from abroad and they offered good market for our beads and baskets.

When CIP-Urban Harvest team introduced them to urban agriculture, Elizabeth was given the responsibility of allocating individual members piece of land in Lanet farm. She had other responsibilities of training the rest of the members how to make necklaces and basketry work. In her farm she grew different kinds of vegetables, beans, sweet potatoes. From this time, food and nutrition to Elizabeth's household was a thing of the past. This implies that accessibility to quality food improved in her household. She could no longer buy vegetables since she grew them. "Also the dairy goat which I was to be allocated gave me a lot hope in life", she said.

Elizabeth has been enjoying being a member of Badili Mawazo, this support group has been providing a forum for socialization to her. Elizabeth confessed that, by her being a member of Badili Mawazo she has acquired also of knowledge in urban agriculture as quoted below;

In BM we learn by sharing knowledge and experiences. Out of selling vegetables, I am able to pay house rent and my health was improved since I can afford to include vegetable in every meal. Due to eating balance diet i have added my body weight and strength, she said.



Plate 3: Exotic and indigenous vegetables grown by Badili Mawazo support group members on Undeveloped plot at Bondeni cluster 17/8/2008

Before she came to town, Elizabeth was practicing farming in the rural areas. Therefore when she joined the urban agricultural intervention project, the activities were not very new to her but she got more knowledge on food and nutrition which she did not have before.

Based on the way Elizabeth was brought up in accordance to Kikuyu culture and her religion there was no inhibition in growing of any type of vegetables and drinking of the dairy goat milk. Therefore these aspects could not have barred Elizabeth from taking up the urban agricultural interventions by the CIP- Urban Harvest.

At the time of the interview, Elizabeth was living in one semi-permanent single room in Lakeview slums in Nakuru Municipality, where she lives with two of her grand children (a girl and a boy). Her daughter abandoned her children when she realized that the grandmother was HIV positive, since she perceived that, the grandmother might have infected the children with the virus. The boy had mental problem but a well wisher assisted Elizabeth to get a special school for him. Elizabeth kept on lamenting, “My own children rejected me when I tested positive and the only person I turned to for help is the grand daughter who is now in standard eight in primary school”, she said.

Elizabeth’s background in agriculture encouraged her to take up the dairy goat keeping and vegetable growing. Also benefits got from the urban agriculture intervention such as improving accessibility to food, reduction of stress which is brought about by shortage of food, health and sustainable livelihood influenced her to embrace the intervention highly.

Case Study :4 Urban agriculture reconstructed an HIV and AIDS widow’s household

It was in 2004 when Miriam’s husband died of HIV and AIDS related sickness. He married Miriam⁴ as the second wife since the first wife could not give birth and they separated. Both Miriam and the husband were living in their own house in Manyani slums. This house was built by Miriam herself before the husband joined her when he separated with the first wife. The

⁴ Real names have been concealed for ethical reasons

husband was working as a foreman in construction sites and his work involved a lot of travelling. He came to stay with Miriam when he started falling ill frequently and he become weak. She could find a lot of receipts in her husband's pocket, showing different types of medicine bought while washing her husband's clothes. Miriam could wonder what kind of disease his husband was suffering from. He started experiencing a consistent cough and when tested he was found to have TB which was at a very advanced stage. Her daughter wanted to chase away the sick father since she claimed he has brought Aids to Miriam but she refused and continued nursing him until he died.

The death of Miriam's husband traumatized her. From that she started worrying for her life. She could imagine that soon she would be dead. She was worried who would bring up her children. She started complaining of Malaria, typhoid and vomiting. As she knew what killed the husband she went for HIV test where she tested positive. Miriam was born in Western Kenya 55years ago and got married as a second wife in 1972. She gave birth to six children. Miriam by the time of this interview looked strong even though she is HIV positive and she is on antiretroviral drugs. She has a wide experience in farming. She confessed to have had been farming as a business where she could hire pieces of agricultural land within the peri-urban and practiced commercial agriculture. Out of this endeavour she generated income for the household and through this also she also gets enough supply of food.

Along with farming Miriam is a business lady in the open market, she could wake up very early in the morning when vendors were bringing in their agricultural goods to the market, where she could play the role of a middleman and out of the transaction she could generate income. It is after this activity which was only in the morning she could leave for farming. As a benefit from CIP-urban Harvest project on urban agriculture intervention, she had dairy goats which are zero-grazed in her compound. At the time the researcher visited her for this interview, Miriam was very busy with her grand daughter chopping some pieces of watermelon and some cabbages which were collected that morning from the market for the goats. Next to the goat structure there were very healthy kales, cowpeas and a banana growing.

When asked whether her luyhia culture had any implication on growing, eating and rearing of dairy goat, Miriam told us, that whether the culture or religion has any inhibition of eating or

drinking any of the products, “as per today the sustainability of my life is more important than my culture and religion norms,” she said.

Miriam informed us that, from her urban farming she had been able to live positively with the virus since she has no stress of inadequate food supply for her household. She got proper nutrition from feeding on vegetables and goat milk. In return she had improved her healthy. Out of the sale of goat milk she earned Ksh1200 per month and she is able to buy other household necessities like soap, salt and sugar. Miriam proceed further praising the urban agricultural intervention project as a good forum of interaction with other friends whom they were able to share and reduce stress which she pointed as a very serious bottleneck to people living HIV and AIDS. She acknowledged to have acquired a lot diversified skills in urban agriculture and in food and nutrition.



Plate 4: A participant of urban agricultural intervention project feeding dairy goat on orange remains from the market at Manyani Estate on 25/10/2008

Miriam exposure to farming as a business contributes to taking up the urban agriculture intervention since it become relevant to her. Out of the vegetable growing she has been able to improve her household income. Also based on her business of brokerage in the open air market, she can collect the agricultural products remains from the market and bring to the dairy goats which in turn produce milk. Therefore, the Miriam exhibited a high level adoption of the intervention and became came to relevant to her life.

Case Study: 5 Medium aged woman with HIV and AIDS disowned by her own family.

Winne⁵ is a very hard working lady although she has been under antiretroviral drugs and living positively with the HIV and AIDS virus. She is a luhya by tribe and a committed Catholic believer. A good indicator for the latter was that one day, when she was very sick just about to die of AIDS, “my family called a Catholic priest to apply oil and wore rosary on me and I told God to forgive me as I do not want to die and since then I always wear my rosary,” she said. Winnie’s family had nine children and three were HIV and AIDS positive. Her sister died and left two children while her brother died in Mombasa in 2006 where he was working.

Winnie was born in Busia District in western Kenya. Her parents who were alive by the time of this interview were well off by rural Kenyan standards. The father was a head teacher in a primary school while the mother was a cateress in a production company. Winnie got her first child when she was in secondary school. Her parents took care of the child and she was able to complete school and train as a copy typist. By this time Winnie was not infected by HIV and AIDS virus.

When her parents relocated to Nakuru town, they opened a private primary school. Winnie as their first born and as a trained typist was given the responsibility of managing the family business since both her parents were working. This is where she was met by the father of her other two children. She got married to this man and gave birth to those two kids, making a total of three including the first born who was out of wedlock. After the birth of the third born in 2003,

Whenever we had unprotected sexual relationship with my husband I developed boils all over my body, and I came to suspect I was HIV positive. I decided to go to VCT centre and the results were positive. When I informed my husband about the status, he denied and decided to disappear from home and left me sickly.

In her prolonged period of sickness, her house rent accumulated to Ksh 18,000. This was because nobody even the parents wanted to be associated with her. Her real mother kept on complaining that her sickness out HIV and AIDS had brought shame to their family. She was assisted to settle the rent arrears by her late brother who also died of HIV and AIDS related ailments.

⁵ Real names have been concealed for ethical reasons

By the time of interviews Winnie was living with her three children; two boys and one girl in a single semi-permanent room, a plot that belongs to her parents. Before she joined the urban agricultural intervention project she was generating her income from baking cakes out of a cooker she was bought by her parents. Winnie is one of the founders of *Badili Mawazo* support group, she had benefited immensely from the urban agricultural intervention project; income for the household from the sale of vegetables, no more stress out of inadequate food and nutrition for her household, loneliness was a thing of the past because she could share her problems with the others, acquired a dairy goat which is an asset and finally she benefited a lot from knowledge acquired in urban agriculture.



Plate 5: Vegetables grown (kales) on an undeveloped plot at Manyani estate on 31/10/2008

By the time of interview Winnie had confidence in life, and she confirmed that her health had improved tremendously since she joined the programme out of feeding on the right diet and no stress.

Winnie's gender as well as being the head of the household since the husband disappeared influenced her to take up the intervention and from it she was able to improve her health through accessing quality food and nutrition. Through interactions and relating with other members of the

support group while participating in urban agriculture activities Winnie reduced stress which is caused by loneliness and shortage of food. Winnie obtained labour for her urban farming from friends, relative and engaging casual, this aspect contributed to her taking up the intervention highly.

Case Study: 6 Hard working man with HIV and AIDS relied on UA for survival

Charles⁶, who is living with HIV virus positively today, was born in 1972 in Kisii District, Kenya. His father was a polygamist, and he was born in a family of three. His mother died when Charles, was six years old. After the mother died he could not bear to stay with the step mother, as she was very harsh to them with the other sister and brothers and she started mistreating them. His father was a logger and he used to split timber with a saw manually, he could travel far and wide, sometimes he could travel up to Tanzania to do the same kind of job. He was ever drunk whenever he came home. They had nobody to turn to for rescue. They moved to live with their grand mother who was living far away from where the father's farm was. This is where they were brought up.

The life in my grand parents' home had a lot of challenges. Like my real father my grand father was also a drunkard man. But I thank God my grandmother was sober and wise. I was to join standard five but since I reported late I was made to repeat in another school.

Their grandmother lived in the rural area, and they could participate in the family's agricultural activities such as looking after cattle, weeding and harvesting coffee. While with the grand parents, Charles was educated up to secondary school level and attained Kenya secondary school certificate. After school Charles, trained as a sales agent.

In 1999, Charles relocated to Nakuru town where he worked for an insurance company. During the five years as an employee of the insurance company he got married to a lady who was an accountant. He decided to resign and start his own commercial agency, a shop for his wife and a salon for his sister all in Nakuru town. Those businesses operated for only three years and they collapsed.

⁶ Real names have been concealed for ethical reasons

The only alternative left to him was to look for employment again. He was employed in 2002 at Ukwala supermarket in Nakuru town as a sales man. After one year in this employment he started experiencing very severe headache. Charles thought it was the usual headache and he kept on taking pain killers. On his right eye some skin rashes developed which was very painful. After seven days he went for treatment where he was prescribed some medicine. When he took them they over reacted with his body. He went further taking some herbs and all was not well. This illness prolonged for sometime, and his sister in-law advised him to go for VCT which he agreed. The results turned to be positive and from that moment Charles confirmed his HIV and AIDS status. He traveled to Kisii where his wife was staying, and told her that he was positive and urged her to go for HIV and AIDS test. She agreed to go for the test and the results were negative. This scenario puzzled Charles, “there should be some witchcraft, and I have to get to the traditional healers to sort out this phenomenon,” he said.

I cannot tell when and where I contracted the virus, simply because when my wife went for pre-natal clinic for the preparation of the birth of our second born, she came home and informed me that she was tested for HIV and AIDS and the results were negative. From the bottom of my heart I was to believe that I am also negative. At the same time I could not be able to trace where, since I had a chain of girl friends, most certainly I could have contracted from Kisii town but my kids are okay, he said. My status is known to my wife, brother, sister-in law and the colleagues in the support group.

There is one moment his eye was very sick and he was advised by his wife, brother, sister-in law to attend treatment at Kijabe mission hospital. When Charles came to know his HIV and AIDS status for the first time he joined “Small Circles”, support group in 2006. He was trained in home care and from the group he was getting free medicine. After a short while, he left for “Love and Hope” support group where he was a member. From here, he was trained on how to initiate and manage a small group and how to handle HIV and AIDS people and prevent further spread of the virus. After three years, “Badili Mawazo” support group spontaneously emerged from “Love and Hope”, This was the point entry of CIP-Urban Harvest to:

Badili Mawazo support group and Nakuru West PCEA church provided a meeting place for the support group. Many support groups for PLWA had emerged and we kept on changing from one group to the other looking for better support, he said.

Based on his life history, Charles was brought in rural agricultural background he had a lot of enthusiasm in urban agriculture which CIP-Urban Harvest team brought to the group. He managed to grow a variety of exotic and African indigenous Vegetables in the farms that were

provided by CIP-Urban Harvest team. “I have acquired a lot of new information on urban agriculture, nutrition and counseling which has changed my attitude towards life” he said.



Plate 6: Participant milking the dairy goat(left) and (Right) participants sharing milk at Bondeni cluster site on 24/8/2008

Charles is proud to be the owner of a dairy goat and has also grown a lot of vegetables next to his rented house in Kaptebwa slums in Nakuru Municipality at the time of this interview. Charles confessed to have benefited widely by adopting urban agriculture as quoted below;

There before the CIP-Urban Harvest team came up with urban agriculture intervention project, sometimes as a family we could go without food and my health had deteriorated but now we are able to get food out of the sale of the vegetables and my healthy has improved out of feeding on quality food. In our culture as Kisii ethnic community, the activity of growing vegetable is a women’s social role, but as a man I am doing it here in town because, out of these vegetables growing I get the daily bread for the family, at the same time, over the years culture has faded away, we are living in town and not in the up country where they put more emphasis on culture” he said

Based on Charles’s story of hope it indicated clearly that, his culture and religious belief did not stop him from embracing urban agriculture intervention as a copying strategy to mitigate the impact of HIV and AIDS. Also, the socio-economic benefits Charles is driving from urban farming enhanced him to take up the intervention highly. He has been able to improve in food

accessibility, nutrition, health and livelihood since he accepted practicing dairy goat keeping and vegetable growing.

4.3 Discussion

This section discusses the related findings from section 4.2. It includes; age distribution of respondents and the adoption of UA intervention, gender for the respondent and adoption of UA intervention, gender for the household's head and adoption of UA intervention, gender composition of persons living with the virus and adoption of UA intervention, marital Status of the respondents and adoption of UA intervention, Size of household and adoption of UA Intervention, Highest Education level of the respondents and adoption of UA intervention, ethnicity of the respondent and adoption of UA intervention, Religion and adoption of UA intervention, Culture and adoption of UA intervention, social benefits accrued from intervention and the adoption of UA intervention, expenditure on medical care and adoption of UA intervention, employment status of household head and adoption of the UA intervention, source of income and the adoption of UA intervention, member contribution to the income and adoption of UA Intervention, provision of labour and adoption of UA intervention previous experience in livestock keeping and adoption of UA Intervention, choice of intervention with most comfort and in adoption of UA Intervention and type of vegetable grown in the project and adoption of UA Intervention. Lastly the results of the six case studies are discussed.

4.3.1 Age distribution of respondents and the adoption of UA intervention

Majority of the household respondents who demonstrated to have embraced the urban agricultural interventions highly were in their forties. This is the productive period of one's life. Further, the result suggested that there was a positive significant relationship between the age of the respondent and adoption of the intervention for the poor HIV and AIDS affected households. This implied that the older participants had a higher adoption of the interventions than the younger persons. Most probably, the older participants had more responsibilities to provide food to their households and had no other sources, unlike the younger persons who could be more versatile and engage themselves in many activities in the urban setting to find food and income for the household. This was clearly evidenced in the in-depth case studies where the six

household respondents who had done exemplary well in the adoption. Almost all of them were in their early forties and others in their early fifties in age.

When I joined the urban Agricultural Intervention programme I had been able to eat more vegetables than I used to do there before and my family gets enough vegetables. Like now, in my farm I have grown capsicum, French beans, Cucumbers and a variety of vegetables that I use almost daily, said Sarah¹, a HIV and AIDS widow of 42 years during the in-depth interview

4.3.2 Gender and Marital Status of respondents

Gender of the respondent and adoption of UA intervention

The results showed that majority of the poor urban HIV and AIDS were women. This is because women are more susceptible to HIV and AIDS infection due to their socio-economic, cultural and their biological composition than their male counterparts. This agrees with NACC (2008) that women in Kenya are particularly vulnerable to HIV and AIDS. In 1.1 million adults infected with HIV and AIDS, twice as many women as men are positive. High rates of infection can be attributed to a combination of biological and social factors. Further, the result demonstrated that women are more open about their HIV status than men, versatile in solving their social problems in a group which could otherwise result to accumulated stress and eventually death. Men like doing it all alone and many die faster from HIV and AIDS infection than women since they are more conservative (closed). In most African traditional customs, when a woman dies the man is allowed to remarry unlike the woman who becomes a widow. Therefore, probably that is why there were more women than men in the poor urban HIV and AIDS affected household support group (BM) in Nakuru Municipality.

The study findings revealed that, it is unlikely that there is a relationship between the gender of the respondent and adoption level of the interventions; although the participants who were women in the intervention project are more likely than their men counterparts to take up urban agricultural intervention. The study findings show that, majority of the women respondents exhibited high adoption level of the intervention. Thus a relationship is implied; men participants in the urban agricultural intervention project are considerably less likely to take up the interventions than women. Most probably because, women in Sub Sahara Africa they are

culturally disadvantaged in socio-economic endowments and are charged with the food security responsibilities of their households. This finding agree with Verheijen and Minde (2007) who found that, women are twice disproportionately affected by the AIDS, partly because of their economic insecurity and low social status, effectively targeting them with relevant technologies is ever more urgent.

Gender of the Household's Head and adoption of UA intervention

Majority of the household respondents' head of households were women. Perhaps, this is because men as the husbands, who were the head of household, die faster out of HIV and AIDS infection and leave their wives as widows (Rugalema et al; 1999). After the death of the husband the wife takes over the role and the responsibilities of the head of the household. Also based on the urban lifestyle, many women who are jobless in the rural areas migrate to town to seek employment as casuals; some end up into commercial sex as a source of income. Eventually they get HIV and AIDS infection. They end up living as single mothers or their husbands might have died of HIV and AIDS where they set up their own households and consequently they play the role of the head of the household. This is a very common occurrence in Kenyan towns (Rugalema et al; 1999).

The results suggest that there is no significant relationship between gender for the household head and the adoption level of the intervention. This finding implied that; the poor urban HIV and AIDS affected households whose head is a woman, is more likely to take up the prescribed urban agricultural intervention than when it is a man within the context of HIV and AIDS in the urban setting, although the relationship is none significant.

The study found that most of the heads of households are widowed in the study area. This probably because their spouses died out of the same infection HIV and AIDS and the role of the household is left to the wife. This agreed with Nguthi (2007) findings that, HIV and AIDS affected households are mostly female-headed and have significantly higher dependency ration than non-affected household. In households where the man is the source of the livelihood and happen to die out of HIV and AIDS before the wife, the household is subjected to economic insecurity and low social status. In this respect Verheijen and Minde (2007) argues that, effective

targeting women with relevant technologies is ever more urgent. Gender of the poor urban HIV and AIDS affected household head and the adoption level of the urban agricultural interventions in the study area is significant. This finding implied that any poor urban HIV and AIDS affected households whose heads were women tended to take up the agricultural intervention to mitigate the impact of HIV and AIDS than the households with men as the head in the study area.

Gender composition of persons living with HIV and AIDS virus and adoption of UA intervention

Majority of the households had one female persons living with the virus. Further, the study showed significant relationship existed between the number of males and females infected with HIV in a household and the adoption level of urban agricultural interventions. However, females were stronger in relationship than their male counter parts. This implied that the number of females or males infected with HIV and AIDS in a household had an influence on the adoption levels of the urban agricultural interventions in the study area.

Marital Status of the respondents and adoption of UA intervention

In most of the African culture, the marital status of an individual is an indicator of how responsible a person is in the community. It is believed that married persons are most likely more responsible than single persons. In this study majority of the participants were widowed followed by married. Probably, this implied that many men have died of HIV and AIDS and left their wives infected. They continue looking after the children while their health kept on deteriorating.

Also most probably, after their husbands died in the rural areas, majority of the women relocated to Nakuru town where nobody knows their HIV status to avoid stigmatization from friends and neighbours. For others, their husbands died in town where they had been living. They immediately relocated to a different estate to hide the cause of death, in order to avoid discrimination and stigmatization from friends and neighbourhood. The study findings from the case studies below show that some the participants of the urban agricultural intervention project had shifted from their previous residence out of stigmatization;

I used to reside in Pipeline Estate, after a long illness I tested HIV positive and when my friends came to know my status they discriminated against me to the extent of not

greeting me with their hands. This behavior was worse in my church and I decided to relocate to Lakeview slum estate and changed to another church where nobody knew my status, said Elizabeth¹, an elderly mother in her fifties during an in-depth interview

This findings demonstrated that it is unlikely that there is a relationship between the marital status of the participant and the intervention adoption level; although, the participants who were married were more likely than single, widowed and separated to have exhibited high adoption level who are the majority in the high level adoption category. This could have been probably because the married participants' family structures were intact and decision making process was more outlined than any other marital status like singles, widowed and separated. A good demonstration is the case studies' findings below;

My wife has been of great help in the adoption of urban agricultural interventions because, we had been deciding together what type of vegetables we should grow and when, in regard to the market demand, said Mr. Charles¹ who is HIV positive in his thirty seventh year of age and married to a woman who is HIV negative (discordant couple) in an in-depth interview.

Size of household and adoption of UA Intervention

Majority of the poor urban HIV and AIDS affected households had 5-6 persons living in the same room and make day to day decisions together. This is a big number considering that most of these households were found in the informal settlement in the urban where they were living in a single room. "I stay with my ten children in this single room, where during the night we turn that table over there upside down to make a bed of three and others sleep on the floor," she said a widow who had hardly stayed a month since she lost the husband out of HIV and AIDS and was living in Kanyoni slums at the time of interview. The results suggest that there is no significant relationship between the number of people living in a household and the adoption level of urban agriculture intervention for the poor urban HIV and AIDS affected household in Nakuru municipality.

4.3.3. Highest Education level of the respondents and adoption of UA intervention

Majority of respondents had attained primary school level as their highest education acquired Based on the results, there is unlikely to be a relationship between the highest educational level of the intervention participant and adoption of urban agricultural interventions levels; although

the participants whose their highest education level was primary were more likely than other mentioned education levels to have exhibited high adoption level for the interventions who were the majority in the high level category. Perhaps when one is literate can see the relevancy of a new idea faster than an illiterate person. This demonstrates that the relationship was not significant.

4.3.4. Ethnicity affiliation, Religion and Culture of respondents

Ethnicity of the respondent and adoption of UA intervention

The study revealed that, there were four ethnic communities' represented in the urban poor population affected by HIV and AIDS in the study area. Majority were Luos followed by Kikuyu community. There was no significant relationship between ethnic affiliation of the household intervention participant and the adoption of urban agricultural intervention level. Although, majority 50% of the twenty one individual participants exhibited a high adoption level belonged to Kikuyu ethnic community. This implied that kikuyus are considerably more likely to take up the intervention than those others. Ethnicity of the household respondent did not prevent the participants of urban agricultural intervention project taking up the intervention as demonstrated below from in-depth case studies' findings;

In my life history, our culture as Luo ethnic community, we do not drink goats' milk, and dairy goats are taken as livestock for women. Some vegetables are for specific gender like the "saget" (*cleome gynadra*) and "mito" (*crotalaria brevidens*) is for women, but despite of this I am now drinking goat milk for my health since it is a requirement from nutritionist as well I grow and eat those vegetables based on what we had been taught in order to live longer with the HIV virus, said James¹ of 51 years old, belonged to Lou ethnic community, has been living with the virus for the last six years.

The findings demonstrated that the ethnic affiliation of the poor urban HIV and AIDS affected household had no influence on the level of adoption of the two urban agricultural interventions in the study area.

Religion and adoption of UA intervention

The results suggests that majority of the respondents' religious belief has no restriction on feeding on vegetables and drinking of goats' milk. Therefore, respondents expressed their

religious belief to have had no significant influence on the adoption of the urban agricultural intervention in the study area.

Cultural values and adoption of UA intervention

The study showed that, majority of the respondents' culture allowed the keeping of dairy goats and growing of vegetables as well as drinking of goat's milk and feeding on vegetables. This was summarized, where it was asked as "does your culture allow you to rear dairy goats, grow vegetables, drink goat's milk and eat vegetables respectively?" Further, the results suggested that cultural factors did not play a big role in the adoption of urban agricultural intervention practices. There were no significant relationships between culture and adoption of urban agriculture by HIV and AIDS affected households in the study area

These current study findings contradicts Lionberger (1966) arguments, where he found out that, the influence of cultural factors in farming stands out in clearest perspective when the behavior of people of different cultural background are compared. For this particular study, culture inhibitions had no influence on the adoption of the urban agricultural interventions. Most probably, because of the urban lifestyle unlike rural set up where culture is more emphasized and recognized since defined communities are living in specified areas bounded by their cultural norms.

Most of the households in the study area had no cultural inhibitions in handling and utilizing dairy goat milk and milk products. This means that, the culture of the respondents did not stop them from handling goat milk. This is evidenced by the fact that majority of the respondents had no cultural problems associated with the drinking of goat milk. This research finding contradicts Rogers (1962) where he argued that in spite of the considerable efforts to secure adoption of an innovation one might wonder why an innovation can fail. Rogers, his study found that one must understand the people and their culture.

Most certainly, the culture of the five communities involved in this study did not inhibit them from taking up the innovations/interventions because of the urban setting. The HIV and AIDS context and nutritionist persuaded those poor urban HIV and AIDS affected households to feed on dairy goat milk and a variety of vegetables in order to enhance the clinical treatment of these household members who were infected with HIV and AIDS, since some were on antiretroviral

drugs. Culture of the household respondent did not prevent the participants of the urban agricultural intervention from taking up the dairy goat keeping and vegetable growing as demonstrated by the results of the case study below;

Our culture as Kisii ethnic community, the activity of growing vegetable is a women social role, but as a man I am doing it here in town because, out of these vegetables I am growing I get the daily bread for the family, at the same time, out of the years, culture has faded away. We are living in town/urban and not in the up country (rural), where they put more emphasis on culture, said Charles¹, a married man living with AIDS virus as a discordant couple said in an in-depth interview

Like any other urban residents, HIV and AIDS affected households originated from different cultural backgrounds and with diverse socio-economic endowments. Their attitudes and values are different towards adoption of ideas and practices in the designed interventions. A farmer may learn from his or her own experimentation with the technology. Advice and technical information may be available from extension services or the media. If there are many farmers somewhat with similar circumstances, the process of learning the new technology may be social. Farmers may learn about characteristics of the new technology from their neighbours (Conley & Udry, 2001). The current findings support Conley & Udry (2001) arguments, participant of the intervention project reported to have learned vegetable growing and dairy goat keeping through their own experimentation with the technology. Others farmers claimed to have learned new production technologies from their fellow farmers.

4.3.5. Social Benefits Accrued from Intervention and the adoption of UA Intervention

Based on research findings there is likely a relationship between Social benefits accrued from intervention project and adoption of the intervention. Participants whose household expressed to have benefited socially from the project through; reduced stigma, raised social status and enhanced scope of friends, majority of the individuals household exhibited high adoption level of the interventions than the household that expressed to have benefited from an attribute such as reduced stigma alone. This implied that not only food, skills, knowledge and income the poor urban HIV and AIDS affected households accrued from the project but also socio-psychological benefits were expressed and they had an influence on the adoption of the intervention. More households embraced the intervention because within the context of practicing urban agriculture

they were getting social healing. This implies that through interaction with other members, the participants were able to share and reduce the stress associated with loneliness as a HIV and AIDS person and stress brought by shortage of food.

According to Rugalema, et al, (1999) psychological stress is common among HIV and AIDS affected communities. It has implication on the performance due to psychological effects, such as loss of a colleague and close friends. “Death is a threatening phenomenon,” remarked an employee of Nyanza based agro-estate during an interview on HIV and AIDS and the commercial Agricultural Sector in Kenya. Therefore, basing on the current study findings, the poor urban HIV and AIDS in Nakuru Municipality operate in a support group known as *Badili Mawazo*. They are able to escape the psychological stress of insufficient food supply and loneliness through adoption of urban agriculture intervention and sharing their experiences by encouraging one another respectively.

This implied that those poor urban HIV and AIDS affected households who said they had benefited socially from the project through reduced stigma, raised social status and enhanced scope of friends had embraced the urban agricultural interventions more than those who said they had benefited from a an attribute such as reduced stigma or raised social status alone in the study area.

4.3.6. Medical care expenditure and household heads employment status

Expenditure on medical care and adoption of UA intervention

The current study findings revealed that, majority of households were spending up to Ksh. 999 on medical care per month. The average amount spend by a household on medical care is Ksh.985. Perhaps, the expenditure is low unexpectedly since most of the medical care services for persons living with Aids are immensely subsidized by the government. This agreed with MOH (2009) that the Kenyan government provides free counseling and antiretroviral drugs, which are issued free to HIV and AIDS patients in all government hospitals in Kenya. The study showed no significant relationship between amounts of money spent on medical care per month by the intervention participant’s household and adoption of urban agricultural intervention. However, the strength of the relationship is very low but in the positive direction. This implied

that amounts of money spent on medical care per month by the intervention participant's household had no influence on the adoption levels of the interventions.

Employment status of household head and adoption of the UA intervention

The findings showed that, majority of the household heads were not employed. Further, demonstrates that there is unlikely to be a relationship between employment status of household head and the adoption level of the intervention; although, the participants who expressed their head of household not employed are more likely than those whose household heads are employed exhibited a high adoption level those who expressed their head of household not employed. This implied that the relationship was not significant.

4.3.7. Source of income and members contributing to household income

Source of income and the adoption of UA intervention

Ten different sources of income were reported by the household respondents interviewed. Majority of the households relied on businesses for their household income. This is mainly petty business selling merchandise in the streets, engaged in business activities such as hawking, making porridge, home baking, small scale home tailoring and basketry. This is probably because; these kinds of households are living in limited resource settings in the informal settlement(slums) and are unable to get adequate capital to embark on better sustainable businesses. This agrees with Castleman et al (2003) findings that HIV and AIDS persons in Sub-Saharan Africa are living in resource limited settings, like the informal urban slums where they experience inadequate income and food shortage.

The next highly placed source of income was employment in security firms. They are employed on part time basis, and then washing clothes in the surrounding rich neighborhood and lastly farming. These livelihood sources conflicted with urban agricultural interventions as they require time and people to be occupied full time. Among the respondents, it was found that urban farming held the fourth position as the source of income. This indicated that, very few households had taken up urban agricultural intervention as a coping strategy for the impact of HIV and AIDS. Despite presence of urban agricultural intervention project and being members

of the same, many preferred to have other sources of income rather than urban agriculture since they claimed that other sources they were able to generate income faster and easily than agriculture.

In relation to the study findings, it is unlikely that there is a relationship between the sources of household income and adoption of urban agricultural interventions levels, although the participants whose sources of household income was from motorcycle taxis and permanent employment are more likely than those whose sources of income were from business, motorcycle taxis, farming, rental houses, casual work, support by church, washing clothes and permanent employment to exhibited a high adoption level. This is certainly because the vegetables they got from the urban farming activity provided stock for their business in the streets in order to generate income.

Member contribution to the income and adoption of UA Intervention

This study showed that majority of the household respondent had more than one member of the household contributing to the income of the household. Based on the study results, it is unlikely that there is a relationship between the number of household members contributing to income of household and adoption of urban agricultural interventions levels; although the participants whose number of household members contributing to income was one were more likely than those whose members were more than one to have exhibited a high adoption level. This implied that the relationship is not significant.

4.3.8. Provision of labour and adoption of UA intervention

Majority of the households never sourced labour beyond self. Most probably they were unable to pay for extra labour. Therefore, they relied on labour from their household to practice urban agriculture. Based on the study findings, there is a strong positive relationship between the Labour provision for vegetables growing and adoption of urban agricultural interventions levels. Participants who reported to have obtained labour from relatives, friends and engaged casuals rather than self tend to have exhibited adoption of the intervention highly. This was further evidenced by the majority of high adoption category participants in vegetable growing who exhibited high adoption level unlike those who provided labour from self who exhibited low adoption. Vegetable growing is a labour intensive enterprise, and therefore for the adoption of

the intervention to be high there should be provision of labour beyond self in order to produce enough as food for the household and extra for income generation.

The findings of this current study corroborate the findings by (Rugalema et al., 1999). He found out that the leading cause of absenteeism of HIV and AIDS infected workers from work at all agro-estate is time spent in seeking treatment by sick employees and provision of care to sick family member/s workers pointed out that they are psychologically unsettled due to various reasons, all of which are related to high frequency of illness and death. Therefore, this study found out that, the infected member of the HIV and AIDS affected household could not afford to provide labour by self to take up the urban agricultural intervention unless there is involvement of other persons such relatives, friends and engagement of casual labourers. The current study findings, further supports Seeley, Grellier and Barnett (2004) that at the household level the labour of somebody with HIV and AIDS disease gradually diminishes as she/he succumbs to sickness and the labour of other household and extended family members is diverted to care for the person who is sick.

4.3.9. Background experience in Agriculture and Choice of UA intervention of respondents

Previous experience in livestock keeping and adoption of UA Intervention

Those respondents who had a background of keeping dairy cows had a significant negative effect on the adoption of urban agriculture (UA) unlike those keeping chicken that had a significant positive effect. This implied that those participants who had a background of keeping chicken exhibited a higher adoption of UA unlike those who had experience of keeping dairy cows. Most probably, those who had previously kept dairy cows had encountered more challenges in bringing up a dairy cow since it requires more resources unlike chicken enterprise where the resources required are less and the pay back period is shorter.

Choice of intervention with most comfort and in adoption of UA Intervention

Based on the study finding, there is an unlikely a relationship between the comfort ability of the participant with the type of intervention and adoption of urban agricultural interventions levels. The participants who were comfortable with dairy goats were more likely than those who were comfortable with vegetable growing and those who did both exhibited a high adoption level This

is certainly because in African traditional society a dairy goat is considered as an asset where one can dispose it for any immediate need of money, source of milk and meat, unlike vegetable growing which requires very little space and very little feeds to manage and maintain dairy goat in urban setting. This implied that the relationship is not significant.

Choice of vegetable type and adoption of UA Intervention

The study findings showed that there is great correlation between the choice of vegetables either exotic or indigenous or both and adoption levels of the vegetables growing. Participants who reported to have been growing vegetables indiscriminately, without considering whether exotic or indigenous in high level category tend to exhibited adoption level highly as the majority. Thus, this relationship implied; the choice of vegetables either exotic or indigenous or both are considerably less likely to affect the intervention adoption level than those who make a stern choice of the vegetable to grow. This implied that the relationship is significant

Type of vegetable grown in the project and adoption of UA Intervention by respondents

All types of vegetable in the project had positive significant correlation with adoption. Probably because of the short payoff period for this kind of crop and requires small space which is appropriate to urban setting where land for agriculture is a scarce resource. Verheijen and Minde (2007) argue that investment in agricultural development is of particular importance when trying to alleviate food and poverty which are key drivers of AIDS pandemic in Sub-Sahara Africa. Further, agricultural innovation is a potential tool to the mitigation of impact of HIV infection. Therefore this study found that growing of vegetables in the urban, which is an agricultural innovation, by poor urban HIV and AIDS affected households addressed the issues of food and poverty which corroborated Verheijen and Minde (2007) findings. Those who embraced the urban agricultural intervention improved in food, nutrition, health and livelihood and this evidenced by the in-depth case study finding below;

In Badili Mawazo support group, we learn by sharing knowledge and experiences. The vegetables I grow provide my household with food and extra I sell to get money to pay house rent. Also my health has improved since I can afford to feed on vegetable in every meal and such I have added weight and strength, said an elderly lady Elizabeth¹, born in 1956 in an in-depth interview and she has lived with virus for twelve year.

The findings of this study corroborates with Byron *et tal* (2006) findings where she found that interventions aimed at strengthening the nutrition security of PLWA who are on antiretroviral (ARV) treatment provide an important source of food support to the most vulnerable patients on treatment and to their households, contributes to the greater dietary diversity, and plays an important role in the emotional well-beingness of clients by lowering the stress caused by insufficient access to food.

The intervention that involved the keeping of dairy goats had higher adoption by the HIV and AIDS respondents. The findings demonstrated that, there is a positive significant relationship between the keeping of dairy goat as an intervention and adoption levels. Participants who expressed to have wished to continue keeping dairy goat by their own tend to have taken up this particular intervention highly.

Case studies

Based on the findings from the case studies, the common observation is that the interviewees shared a similar social background. They were all brought up in poverty stricken households in the rural areas. This finding supports Verheijen & Minde (2007) arguments that poverty and food security are key drivers of AIDS pandemic in SSA. From these case studies it can be observed that HIV and AIDS spread can be a vicious cycle and it has a social root. They all had a history of losing a family member through AIDS and left taking care of the grand sons and daughters. According to Rugalema, Weigang & Mbwika (1999) psychological stress leads HIV and AIDS persons ending up in deteriorating health status and reduced lifespan. All the interviewees in the case studies expressed to have accrued social benefit by reducing stress, stigma, raised social status and enhancing scope of friends from embracing urban agriculture through interactions. This had good returns to access to quality food, improved health status, improved nutrition, secured livelihood and prolonged life

The finding agrees with CARE (2004) arguments that an intervention helps to promote economic development in HIV and AIDS affected communities and to reduce the economic vulnerability of affected household and individuals. All the interviewees in the case studies recognized increase in their household income and food security out of embracing urban agriculture. This

supports Bukusuba et al., (2007) findings that undertaking of agriculture by PLWA households is one of the positive coping mechanisms to alleviate food insecurity. Most of these kinds of households are found in the urban slums. This agrees with Castleman et al., (2003) findings that in SSA, people living with HIV and AIDS live in resource limited settings like the informal urban slums and are often unable to follow optimal food and nutritional recommendations for antiretroviral therapy because of lack of access to foods required. Through embracing urban agriculture the case studies' interviewees acknowledged integrated clinical treatment with good food and nutrition in combating the impact of the HIV and AIDS.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Introduction

This chapter contains summary, conclusions and recommendations of the entire study. Based on the study objectives and data analysis the summary highlights the key research findings. The conclusions drawn from the study findings are categorised into two, namely; theoretical and empirical. The latter encompasses the conclusion drawn from the empirical study findings while the former from the theoretical findings perspective. With the background of the conclusions the study makes recommendations which are of two fold; policy and suggestions for further research.

5.2. Summary of the Findings

Evidenced from the study objectives, research questions and data analysis, below is the summary of the major research findings:

5.2.1. Sociological factors

Age as a key factor in the adoption of urban agricultural intervention

Based on the results, poor urban older persons from HIV and AIDS affected households are more likely to take up urban agricultural interventions to alleviate the impacts of HIV and AIDS than the younger persons. Not only in urban and HIV and AIDS context, older persons, especially women are responsible for household food security and such they are more likely to take up the intervention faster and higher than the younger persons. In reference to urban setting, younger persons wish to get involved in enterprises that have a faster payoff period like petty businesses of hawking in the streets unlike agriculture which takes more time to realize the output.

Gender as a key factor in the adoption of urban agricultural intervention

Gender of the participant as well as of the head of household featured prominently to have influencing adoption of urban agricultural interventions for HIV and AIDS affected households. Women are more likely to embrace the interventions than men. Households whose heads were

women embraced the intervention to alleviate the impacts of HIV and AIDS more than where the heads were men. Therefore, gender aspect among the poor urban HIV and AIDS affected households demonstrated a key factor in the adoption of the intervention.

Social benefits accrued intervention as key factor in Adoption of UA Interventions

If socio-psychological factors are not addressed among HIV and AIDS persons; they end up developing psychological stress which can lead to deteriorating health status and reduced lifespan. The results demonstrated that Social benefits accrued from the urban agricultural intervention such as; reduced stigma raised social status and enhanced scope of friends influenced the rate of adoption of the intervention

Income from UA interventions as a key factor in adoption of UA interventions

Income generated from urban agriculture, such as sale of vegetables featured clearly to have had a key influence on the adoption of the intervention. Majority who embraced the intervention reported to have generated income from the sale of vegetable and others from goats' milk. Also, those who never realized income directly from the sale reported to have obtained income indirectly by not spending money on buying of vegetables and milk from the market and getting from their own production.

Impact of urban farming on income as a key factor in adoption of UA Intervention

Those underprivileged urban HIV and AIDS affected households who reported to have increased their income out of growing of vegetables and rearing of dairy goats embraced the urban farming interventions more than those who articulated their income to have remained stagnant in the study area. Consequently, increase of income from the sale of vegetables and goats' milk had a key influence on the adoption of those two interventions.

Provision of labour and adoption of UA intervention

There is a strong positive relationship between the Labour prerequisite for vegetables growing and adoption of urban agricultural interventions. Participants who reported to have obtained labour from relatives, friends and engaging casuals rather than self tended to have exhibited adoption of the intervention highly. Vegetable growing is a labour demanding enterprise, and

therefore for the adoption of the intervention to be high there should be provision of labour supply beyond self in order to produce enough as food for the household and extra for income generation.

5.2.2. Project design's related factors

Based on the initial project design, two enterprises were proposed; dairy goat rearing and growing of African indigenous vegetables. However, as the project continued the participants were allowed to grow others types of vegetables.

Choice of vegetable type as a key factor in Adoption of UA Interventions

The project skilled the underprivileged urban HIV and AIDS affected households explicitly on vegetable growing which encompass; exotic and indigenous (AIV).The results showed that, the choice of vegetable one grew had a sturdy relationship with adoption level of the urban agricultural intervention. It notably featured in the study findings, since nutritionist had trained them on the importance of integrating clinical treatment with nutrition to enhance health status of PLWA.

Vegetable growing as a key factor in adoption of UA Interventions

All interventions linked to vegetable growing in the scheme had positive significant correlation with adoption. Most likely, because of the short payoff period for this kind of crop that requires small space which is appropriate to urban setting where land for agriculture is a scarce resource. The research result revealed vegetable growing as the key urban agricultural intervention for the underprivileged urban HIV and AIDS affected households and mainstream had embraced it as a source of food and nutrition for their households. It was also noted that, many of the household were generating income from vegetables retailing.

Prior acquaintance with Agriculture and adoption of UA Intervention

Underprivileged urban HIV and AIDS affected household that had background skills in rearing dairy cows had a significant negative effect on the adoption of urban agriculture (UA). Dissimilar to those who had prior acquaintance with rearing of chicken had a significant positive

effect. This implied that those participants who had a background of rearing chicken exhibited a higher adoption of UA unlike those who had experience of keeping dairy cows.

5.3. Conclusions

This study examined the sociological and project related factors affecting the adoption of urban agricultural intervention for the poor urban HIV and AIDS affected households in Nakuru Municipality.

5.3.1. Theoretical Conclusions

The study had its foundation on two theories namely Innovation-Diffusion and Rational Choice theories to explain the social phenomenon behind the adoption of urban agricultural intervention. The findings showed that the households through their representative in the intervention project got exposed to urban agriculture intervention existence and gained understanding of how it functions. However, after knowing about the intervention, the individuals were persuaded by project initiators through training, to embrace the intervention because they did not regard it relevant to their situation. The outcome of the persuasion stage was demonstrated by the fact that, adoption levels of those who embraced the intervention differed among the respondents.

Some exhibited high, medium and low adoption, while others expressed rejection. The respondents who embraced the interventions put it into use where they grew vegetables and kept dairy goat for food, nutrition and income. Finally, the respondents kept on seeking guidance from the project initiators as reinforcement for the decision made. It validates Rogers (1995) arguments in what he referred as innovation decision process which is characterized by five stages, namely; knowledge, persuasion, decision, implementation and confirmation.

5.3.2. Empirical Conclusions

Based on the results obtained from this research work the poor urban older persons of 40-52 year of age are more likely to take up any agricultural intervention to mitigate the impact of HIV and AIDS than younger persons of 27-36 years of age in the urban setting. Younger persons were more vibrant in hawking in the town streets, motorcycle taxis, washing clothes for rich neighborhoods especially single mothers and widows as a source of their livelihood.

On gender, women were more open about their HIV status to other colleagues than their men counterparts. They were more versatile in solving their social problems in a group unlike men who preferred to do it all alone as an individual. This evidenced by the fact, that 90% of the sampled respondents from *Badili Mawazo* Support group were women who have come together to seek financial and emotional support to mitigate the impact of HIV and AIDS. Within the context of HIV AND AIDS in the urban setting, the household whose head was a woman demonstrated positive significant relationship $P < 0.05$ with adoption and this indicated that households of this category are likely to take up any agricultural intervention more than when it is a man to enhance income, food and nutrition of the household of the HIV and AIDS affected household.

The income generated from the urban agricultural intervention especially from the sale of vegetables increased immensely to the poor urban HIV and AIDS affected household income and the impact had an influence on adoption acceleration of the intervention. There was a positive significant and strong relationship between the income and adoption.

Social benefits accrued from the urban agricultural intervention such as; reduced stigma raised social status and enhances scope of friends influenced the rate of adoption of the urban agricultural interventions. If this fore mentioned socio-psychological factors are not taken in control among HIV and AIDS persons they end up developing psychological stress which can lead to deteriorating health status and reduced lifespan (Rugalema *et al.*, 1999). There was a positive, significant and strong relationship between the social benefits and the adoption of the intervention.

Project related factors had some influence on the adoption of the urban agricultural interventions. The appropriate choice of the intervention to mitigate impact of HIV and AIDS among the poor affected household was critical in the adoption rates. All types of vegetables which encompassed both exotic and indigenous were grown in the project; spinach, kales, cabbages, onions, mito, amarathus, spider flower, cowpeas and carrots had positive significant correlation at $P < 0.5$ with adoption but spinach which is an exotic vegetable was the most preferred followed by “mito” which is an indigenous vegetable. Not only positive correlation, a strong strength of relationship.

Dairy goat keeping as an intervention in the project proved to have been appropriate, since the findings demonstrated that there was a positive and significant relationship with the adoption levels of the intervention. The respondents who had background knowledge of keeping urban chicken keeping had a significant positive $P < 0.05$ effect on the adoption of urban agriculture intervention unlike those who had a previous knowledge on urban dairy cow rearing who demonstrated a non-significant negative $P > 0.05$ effect

Source of labour for production of vegetables had influence on the rate of adoption of the agricultural invention. Those respondents who sourced labour beyond self and had addition source from the relative, friends and sometimes engaged casual labourers exhibited high adoption level and there was a significant strong positive relationship.

From the six case studies of the individual social life history narratives, the study found that 100% of all the cases, the respondents shared the same experiences of unstable social family life during their youthful age. All the participants in the six cases blamed their social roots and linked their current painful context to the way they were brought up in their individual family structure. For instance, the case of Elizabeth¹ and Charles¹. Also, all the same six had a background of agriculture as a livelihood in the rural area where they were brought up. This agreed with Karanja (2007) that farmers in SSA move with their indigenous knowledge of growing crop and keeping of livestock from the rural area to urban. Others were involved in urban and peri-urban farming even before they become infected with HIV and AIDS and joined the support group. Therefore, their social life history had an influence on the adoption of the urban agricultural intervention

To conclude the research findings; the socio-cultural, economic, demographic, project related and social life history of the poor urban HIV and AIDS affected households had an influence on the adoption of the urban agricultural interventions except some factors such as; ethnicity, religion, culture, gender of the respondent, education, marital status size of the household, number of persons infected with HIV in a household, medical expenditure for a household per month, household head employment status, number of household members contributing to income and household source of income

5.4. Recommendations

Based on the fore mentioned conclusions, this study makes the following recommendations relating to policies, projects, programmes and future research regarding adoption of urban agricultural intervention to mitigate the impact of HIV and AIDS on food security for the urban poor affected households in the study area, other urban settings in Kenya and world at large They are divided into policy recommendation and future research.

5.4.1. Policy Recommendations

From the study findings, policy recommendations were formulated that can address the hiccups on adoption of urban agriculture as a food security strategy for the urban poor HIV and AIDS affected households.

Age and Gender for the infected persons

Age and gender for the infected persons is critical in the adoption of urban agricultural intervention. This research finding demonstrated that older poor urban HIV and AIDS persons (40-52years) are likely to take up urban agricultural intervention highly than younger persons (27-36years). As such, as a recommendation any urban agricultural intervention project on food security to mitigate the impact of HIV and AIDS on food security of the affected households should target older persons mostly women.

Integration of Socio-Psychological Counseling

As a recommendation, all development projects targeting HIV and AIDS communities especially in urban slums should integrate socio-psychological counseling in their programs in order to counteract the psychological stress which is associated with insufficient food supply and stigmatization of PLWA.

Diversification of the intervention

In the study ten different sources of income were mentioned by the poor urban HIV and AIDS affected households. Majority of the households relied on businesses for their household income; this is mainly petty business selling merchandise in the streets. The next highly placed source of income was employment in security firms these firms employ them on part time basis, and then

washing clothes in the surrounding rich neighborhood, then urban farming. These livelihood sources will conflict with agricultural interventions as they require time and people to be occupied full time. Therefore, as a recommendation any development project targeting poor urban HIV and AIDS affected households could focus on these interventions mostly the petty business which is their mainstay for their livelihood. This should be done by imparting entrepreneurial knowledge and provide credit provision through a well established micro-finance.

Sustainable Urban Agricultural Intervention

Further as a recommendation for a sustainable urban agricultural intervention project design, consideration of non-rain fed urban farming is important. For this aspect to be possible involvement of the urban water, environmental and municipality governance can contribute to the sustainability of any urban food security enhancement for urban poor HIV and AIDS affected household not only in the study area but in the whole urban areas in Sub-Saharan Africa.

5.5. Area for Further Studies

Based on the current findings, further research is recommended on the following areas; more adoption studies on different crops and livestock kept by poor HIV and AIDS affected households in other urban areas and emphasis should be put on food security and research on sustainability of urban agriculture as a tool to mitigate effects of HIV and AIDS in the slums. Also, more research should be done on microfinance within the context of HIV and AIDS in urban settings. For a long time in Kenya, there has been rivalry between the urban dwellers especially the poor and the municipality law enforcement team when the former perform any urban agriculture practice. However, in general terms, further research on urban agriculture policy analysis should be done. This will solve an eminent problem in local authorities regulating urban agriculture in the municipality area.

REFERENCES

- Anderson, C.L., Gugerty, M.K., Levine, R.O. & Weaver, M. (2002). *Microfinance and HIV and AIDS: Five Key Questions on Program Impact*. USA, University of Washington Press.
- Barnes, C. (2002). *Microfinance and mitigation of the impacts of HIV AND AIDS: An exploratory study from Zimbabwe*. Assessing the Impact of Microenterprise Services (AIMS). Paper. Presented at Management Systems International, Washington DC. Retrieved May 15, 2010 from http://www.usaid.gov/pdf_docs/PNACW414.pdf
- Barnett, T., Whiteside, A. (2002). 'Poverty and HIV and AIDS: Impact, Coping and Mitigation Policy', in G.A.Cornia (eds), *Aids, Public Policy and Child Well-Being*. UNICEF-IRC Press.
- Byron, E., Gillespie, S. & Nangami, M. (2006). *Integrating Nutrition Security with Treatment of People Living with HIV: Lessons being Learned in Kenya*, International Food Policy Research Institute Report, Washington DC. Retrieved May 20, 2010 from <http://www.ifpri.org/renewal>
- Bukusuba, J., Kikafund, J.K. & Whitehead, R.G. (2007). Food Security Status in Households of People Living with HIV and AIDS in Uganda Urban Setting. *British Journal of Nutrition*, (98) 211-217. Retrieved June 20, 2010 from http://www.journals.cambridge.org/action/display_issue?jid.
- Cooperative for American Relief Everywhere (2004). *An initiative supporting the basic income and needs of HIV and AIDS affected households and individuals*. SIMBA Programme, Cooperative for Assistance and Relief Everywhere, Inc. (CARE), Zimbabwe. Retrieved July 24, 2010 from <http://www.care.org/careswork/whatweo/aids/publications.acp>
- Castleman, T. Seumo-Fosso, E. & Cogill, B. (2003). *Food and Nutrition Implications of Antiretroviral Therapy in Resource Limited Settings*. Food and Nutrition Technical

Assistance Academy for Education Development, Kenya. Paper presented at the XV11 international AIDS conference, Mexico City

Conley, T. & Udry, C. (2001). Social Learning through Networks: Adoption of new Agricultural Technologies in Ghana. *American Agricultural Economic Association*, 83(3):668-673.

Costigan, A., Odek, W.O., Ngugi, E.N., Oneko, M., Moses, S., & Plummer, F.A. (2002, July 12th-17). *Income generation for sex workers in Nairobi, Kenya: Business adoption and behavior change*. Paper presented at the XIVth International AIDS Conference, Barcelona, Spain. Abstract MoPeF4143. Retrieved June 4, 2010 from http://www.usaid.gov/pdf_docs/PNACW414.pdf

Foeken, D.W.J., Owour, S.O.K. (1999). *Urban Farmers in Nakuru, Kenya ,ASC Working Paper No. 45/2000*. Kenya, University of Nairobi Press.

Foeken, D.W.J., Owour, S. O. & Wijnand, K. (2002). *Crop Cultivation in Nakuru Town, Kenya, ASC Working Paper 50/2002*. Netherlands, African Studies Centre Leiden Press.

Hedstorm, P. & Stern, C. (2001). *Rational Choice and Sociology*, London, University Of Oxford Press.

Karanja, N. (2007). *Farming as an Urban Occupation, Urban Research/New Agriculturist 2007 4*. UK, Wren Media Press,

Kasomo, D. (2007). *Research Methods in Humanities and Education*. Kenya, Azapf Chancery Publications Press.

Kenya Government, (1999). *Economic Survey Report*. Nairobi, Government Printing Press.

Kenya Government, (2009). *Kenya Bureau of Statistic, Population Census Report*. Nairobi, Government Printing Press.

Lengkeek, A. (2004). *Trees on farm to mitigate the effects of HIV and AIDS in SSA. Agro Biodiversity and Agro Forestry to Mitigate the Impact of HIV AND AIDS*. Retrieved July 19, 2010, from <http://www.bananahill.net>

- Lionberger, H.L. (1966). *Adoption of New Ideas and Practices*. USA, Iowa State University Press.
- Mack, N., Woodsong, C., Macqueen, K.M., Guest, G., & Namey, E. (2005). *Qualitative Research Methods: A Data Collection Field Guide*. USA, Family Health International Press.
- Ministry of Health, (2009). *Nakuru District Aids and Sexual Transmitted Diseases Annual Report*. Nakuru, NDASCO office.
- Mugenda, O. M., Mugenda, A.G. (1999). *Research Methods; Quantitative & Qualitative Approaches*, Nairobi, African Centre for Technology Studies Press.
- Mungai, J.G. (1985). *Analysis of the Factors Which Affect Participation in Literacy Learning*, Master of Arts Thesis, University of Hull.
- Mutai, B.K. (2000). *How to Write Quality Research Proposal: A Complete and Simplified Recipe*. New Delhi, Thelley Publications Press.
- National Aids Control Council, (2001). *United Nations General Assembly Special Session Report for Kenya*, Nairobi, Government Printing Press.
- National Aids Control Council, (2008). *United Nations General Assembly Special Session Report for Kenya*, Nairobi, Government Printing Press.
- National Aids Control Council, (2009). *Guidelines for Field Operations at the NACC Decentralized Structures*. Fifth Edition, Nairobi, Government Printing Press.
- National Constituency Aids Control Committee, (2009). *Nakuru town Constituency Aids Control Committee Annual report*, Nakuru CACC Office
- Neuman, W.L. (2006). *Social Research Methods: Qualitative and Quantitative Approaches*, 6th ed., United States, Pearson Education, Inc.

- Nguthi, F.N. (2007). *Adoption of Agricultural Innovations by Stallholder Farmers in the Context of HIV AND AIDS: The Case of Tissue-Cultured Banana in Kenya*, Ph.D. Thesis, Wageningen University.
- Odek, W.O., Costigan, A., Ngugi, E.N, Moses, S., Plummer, F.A, and Oneko, M. (2002a July 7-12). *Adapting micro-finance to HIV vulnerable communities: Lessons for scaling up from a Kenyan pilot project targeting female sex workers*. Paper presented at XIVth International AIDS Conference, Barcelona, Spain. Abstract MoOrF1046. Retrieved May 15,2010 from http://www.cira.med.yale.edu/law_policy_ethics/mcrofin_global.pdf
- Odek, W.O., Costigan, A., Ngugi, E.N, Moses, S., Plummer, F.A, and Oneko, M. (2002b July 7-12). *Business successes and failures among female sex workers: Results from a Kenyan pilot project*. Paper presented at XIVth International AIDS Conference, Barcelona, Spain. Abstract MoPeF4129. Retrieved May 15, 2010 from http://www.cira.med.yale.edu/law_policy_ethics/mcrofin_global.pdf
- Pandey, G.S., Muliokela, S.W. (2006, May 9). *Small Holder Farming: A tool For HIV AND AIDS Mitigation and Food Insecurity*. Paper presented at the Africa Forum on the dual epidemic of HIV and AIDS and food security at Pamodzi hotel Lusaka, Zambia. Retrived on May 17, 2010 from http://www.projectconcern.net/.../Smallholder_Dairy_Farming-Pandey.pdf
- Peacock, C. (1996). *Improving Goat Production in Tropics, a Manual for Development Workers*. UK and Ireland, an Oxfam/Farm–Africa Publication Press.
- Population Reports, (2002). *Meeting the Urban Challenges*, USA, John Hopkins Bloomberg School of Public Health Press .volume no.4.
- Rogers, E.M. (1962). *The Diffusion of Innovations*, USA, Free Press of Glencoe.
- Roger, E.M., Shoemaker, F.F. (1971). *Communication of Innovations, Across- Cultural Approach*, 2nd Ed. London, Free Press.
- Rogers, E.M. (1995). *The Diffusion of Innovations*, New York: Free Press, 5th Edition.

- Rugalema, G., Weigang, S., Mbwika, J. (1999). *HIV and AIDS and the Commercial Agricultural Sector of Kenya. Impact, Vulnerability, Susceptibility and Coping Strategies*, FAO and UNDP, Rome, Italy.
- Salim, M. (1986). *Rural Innovation, in Agriculture*. New Delhi, India Chugh Publications Press.
- Scott, J. (2000). *Rational Choice Theory, Understanding Contemporary Society: Theories of the Present*. UK, Sage Publications Press.
- Seeley, J., Grellier, R., Barnett, T. (2004). Gender and HIV and AIDS Impact Mitigation in Sub-Saharan Africa Recognizing the Constraints. *Journal of social aspects of HIV AND AIDS*, 1 (2), 87-89.
- Swindale, A. (2004). Assessing the Potential for Food Aid Interventions in High HIV Prevalence Contexts: HIV and Food Aid. *Entebbe, Uganda*: Paper presented at Assessment for Regional Programs and Resources Integration Workshop, Washington DC. Retrieved July 27, 2010 from http://www.new.paho.org/disasters/index.php?option=com_docman&task.
- Technical Report, (2008). *Combating HIV and AIDS in Urban Communities through Food and Nutrition Security: The Role of Women-Led Micro-Livestock Enterprises and Horticultural Production in Nakuru Town, Kenya*, Urban Harvest, International Potato Centre (UH-CIP).
- Verheijen, J., Minde, I. (2007). Agricultural Innovations: A Potential Tool to HIV Mitigation, *Journal of SAT Agricultural Research* (5).1-11.

APPENDICES

APPENDIX 1: Interview Schedule

Section A: Background information of respondent

- 1. Gender 1. Male [] 2. Female []
- 2. Year of birth.....
- 3. Place of resident.....
- 4. Indicate your ethnic affiliation

SECTION B: Socio-cultural Factors Information

- 5. Marital status 1. Married [] 2. Single [] 3. Windowed [] 4. Separated [] 5. Divorced []
- 6. Number of people in household.....
- 7. How many people are infected with HIV in your household? number of male..... number of female.....
- 8. Since you started feeding on the vegetables you get from the intervention project has your health improved 1. Yes [] 2. No []
- 9. What social benefits have you acquired from the Agricultural intervention programme
 - 1. Reduced stigma
 - 2. Raised my social status
 - 3. Enhance scope of my friends
- 10. Gender of household head
 - 1. Male [] 2. Female []
- 11. Does your culture allow you to rear dairy goat?
 - 1. Yes [] 2. No []

12. If yes, who performs the following activities:-

Activity	Men	Women	Children	
			Boys	Girls
Carrying fodder for the livestock				
Actual feeding of the livestock				
Cleaning of the goats structure				
Diagnosing any sickness				
Detecting heat				
Assisting in the kidding down				
Milking				
Constructing for the goat				
Herding in the field				

13. Who performs the following activities in vegetable production?

Activity	Men	Women	Children	
			Boys	Girls
1. Procurement of vegetable seed				
2. Land preparation				
3. Nursery preparation				
4. Sowing in the nursery				
5. Attending seedling in the nursery				
6. Transplanting				
7. Planting				
8. Weeding				
9. Spraying				
10. Harvesting				

14. Since you are now in the intervention do you believe there are activities you are forced to perform in the intervention, which your culture prohibits?

1. Yes [] 2. No []

15. If yes which ones? 1.....2.....3.....

16. Does your culture permit you to drink dairy goat milk 1. Yes [] 2. No []

17. Does your religion have any restriction on the handling and utilization of products you from dairy goat and vegetables? 1. Yes [] 2. No []

18. If yes which products

1. Dairy goat milk [] 2. Dairy goat meat [] 3. Vegetables []

SECTION C: Socio-economic factors information

- 19. Have you acquired agricultural skills 1. Yes [] 2. No []
- 20. For sustainability of agriculture skills you have acquired do you involve the rest of your household members 1. Yes [] 2.No []
- 21. If yes who are those? 1. Our children [] 2. Relatives [] 3. Friends [] 4. Others []
- 22. Before you got into the intervention what were you doing to earn a living?
1. Small scale business [] 2. Casual employment [] 3. Permanent employment []
- 23. Who provided labour for the production of the above vegetables?
1. Self [] 2. Relatives [] 3. Paid workers 4. Unpaid workers [] 5. Other []
- 24. Since you joined the intervention project, how is your household income?
1. Increased [] 2. Decreased [] 3. Remain stagnant []
- 25. Since you joined the intervention programme do you get enough food supply for your household? 1. Yes [] 2. No []
- 26. How many household members contribute to the household incomes?
1. One [] 2. More than one [] 3.....
- 27. What is your highest education level?
1.Not gone to school[]2. Non formal schooling [] 3. Primary []4.High school [] 5.Tertially
- 28. Are you employed? 1. Yes [] 2. No []
- 29. If yes what kind of employment?
1. Casual [] 2. Permanent []
- 30 If no what is the source of income for your household? 1.....2.....3.....
- 31. How much do you spend on medical care per month?.....

SECTION D: Project design related factors information

- 32. Are you today in the intervention 1.Yes [] 2. No []
- 33. If yes which cluster are you allocated?
1. Tumaini [] 2. D.C Quarter [] 3. Kaptembwa[] 4. Manyani [] [] 5.Soilo[] 6. Lanet []
7.”50x100”[]
- 34. Which of the vegetables did you like to grow most 1. Exotic [] 2. Indigenous []
- 35. Which intervention are you more comfortable with? 1. Dairy goat [] 2.Vegetablegrowing[]
- 36. If Dairy goat production, why? 1.....2.....3.....
- 37. If vegetable production, give reasons.1.....2.....3.....

38. Tick the names of the vegetables you have ever grown in the project since you joined and indicate how it was utilized.

Name of vegetable	Eaten at home	Sold for income
1. Kales		
2. Spinach		
3. Cabbage		
4. Onions		
5. <i>Amaranthus/terere</i>		
6. Spider plant/saget		
7. Mito		
8. Cowpea		
9. Sweet potato		
10. Carrots		

39. Name the crops you grew and the livestock you reared? Tick to indicate utilization.

Crops	Eaten at home	Sold for income	Livestock	Eaten at home	Sold for income
1.			1.		
2.			2.		
3.			3.		
4.			4.		
5.			5.		

Thank you so much for your time and for responding to our questions. May God bless you.

APPENDIX 2: In-depth Interview Guide

Background information

1. How old are you currently?
2. Did you go to school and up to which level?
3. Currently are you married? Monopoly or polygamy marriage?
4. How many people live with in your house?

Social-cultural, economic factors on adoption of agricultural intervention

5. What is your ethnicity group? In your indigenous land, did you use to participate in agriculture activities? If yes, did you use to rear dairy goat and vegetables? How is your culture on those two agriculture activities? , who is entitled in a family or household to take care of dairy goat? As a woman/ or man do you feel, the project has involved you in activities that culturally you are not suppose to do? If yes which one and why and how. Does Urban Harvest approach contradict your norms and values? Please elaborate on this?
6. What is your religion? Does your religious faith/belief have any implications on dairy goat rearing and vegetable growing?
7. Before you joined the intervention project were you practicing any urban agriculture? If yes, please elaborate where and which crops and livestock? Have you ever experienced any confrontation with municipal authority?
8. Does your medical care expense have any impact on your participation in the dairy goat and vegetable growing at all? If yes how and why
9. What do you understand by health eating habits? In reference to your status, does the dairy goats and vegetable contribute to this? If yes how and why?
10. How can you describe your health status before you joined the intervention and after? Please elaborate on this.
11. As you participate in the intervention is transportation a problem to the sites? If yes how and why?
12. Is your family an obstacle or an encouragement in the adoption of the two intervention activities? I.e. dairy goats and vegetable growing?

Project related factors on the adoption of the agricultural intervention

13. Do you like the individual way of growing vegetables being practiced?

14. What hopes do you have in the intervention of dairy goat and vegetables?
15. What urban agriculture skills have you acquired in the intervention.
16. Since you joined the intervention, which particular activities have you been involved in the project?
17. Do you involve your family in those activities? If yes which member of your household and which type of activity and how often?
18. For the long you had been in the intervention have you attained any social benefit, urban agricultural skill, food supply and cash money earning? Please elaborate.
19. If the project stops today, what benefit have you gained which can help you to continue living well out of the project. Please elaborate this?
20. Apart from urban intervention project activities, which other activities do you engage in your day-to-day life? Please elaborate.

Compatibility of the intervention

21. How frequently does your family feed on vegetables? (Exotic and indigenous)
22. What do you do with the vegetables and milk you get from the goats? Please explain
23. Does your health inhibit you in participating in the interventions (goats and vegetables)? Explain
24. Do the two kinds of intervention affect your health status in anyway? If yes explain why and how.
25. How often do you attend support group meetings on Friday of every week?
26. Is rearing of dairy goat a new venture to you? If yes how?
27. Are you able to afford the inputs needed in dairy goat and vegetable growing? If no how and why?

Thank you so much for your time and for responding to our questions.

May God bless you.

APPENDIX 3: Respondents' Residential Urban Estates

Name of the urban slum	Frequency	Percent
PONDA MALI	5	8.1
BONDEN	9	14.5
MANYANI	6	9.7
KAPTEMBWA	4	6.5
RONDA	16	25.8
FLAMINGO	3	4.8
LAKEVIEW	3	4.8
SHAURI YAKO	2	3.2
LANGALANGA	1	1.6
MWARIKI	6	9.7
BAHARINI	2	3.2
KITI	1	1.6
KIVUMBINI	1	1.6
KALOLENI	3	4.8
TOTAL	62	100.0

Source: Field Data 2009

APPENDIX 4: Letter of Research Authorization

REPUBLIC OF KENYA



NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

Telegrams: "SCIENCETECH", Nairobi
Telephone: 254-020-241349, 2213102
254-020-310571, 2213123.
Fax: 254-020-2213215, 318245, 318249
When replying please quote

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref:

Date:

NCST/RRI/12/1/SS/503

9th June, 2010

Gideon Muchiri Muriithi
Egerton Univesity
P.o Box 536
Egerton

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "*Factors Affecting Uptake of Urban Agricultural Interventions for HIV/AIDS Affecting Households: A Case of Poor Urban Households in Nakuru Municipality, Kenya*" I am pleased to inform you that you have been authorized to undertake research *Nakuru District*, for a period ending *31st July, 2010*.

You are advised to report to the *District Commissioner, the District Education Officer Nakuru District and the Town Clerk Nakuru Municipality* before embarking on the research project.

On completion of the research, you are expected to submit two copies of the research report/thesis to our office.


P.N. NYAKUNDI
FOR: SECRETARY
