PROVISION AND PERCEPTIONS ON NUTRITION EDUCATION FOR PEOPLE WITH HIV/AIDS, AT THE PUBLIC COMPREHENSIVE CARE CLINICS: A STUDY OF NAIROBI DISTRICT CLINICS IN KENYA

By

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DECLARATION

I Emily Sakwa-Madete, hereby declare that this dissertation is my original work and has not been presented for a degree in any other university

Sign Emily Sakwa

Date 24 - August - 2009

This dissertation has been submitted for examination with my approval as the university supervisor

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DEDICATION

To my beloved mother Elizabeth Oloo Sakwa,

And

To my father, the late Augustine Nyamwoma Sakwa.

Dad: You did believe in me.

Mum: I admire your determination in life.

To Bruce Madete,

Thank you for being there for me,

Always.

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LIST OF ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
AMPATH	Academic Model for Prevention and Treatment of HIV/AIDS
ARV	Anti-Retro Viral (Drug therapy)
CCC	Comprehensive Care Clinics
DASCO	District AIDS and Sexually Transmitted Infections Coordinator
DMO	District Medical Officer
FAO	Food and Agriculture Organization
FANTA	Food And Nutrition Technical Assistance
FGD	Focus Group Discussion
GATHER	A recommended process to be used in provision of nutrition education; Process outlined on Page 14
GOK	Government of Kenya
GLIA	Great Lakes Initiatives
HIV	Human Immunodeficiency Virus
IEC	Information Education and Communication
IFDD	Individual Food Dietary Diversity
KNASP	Kenya National HIV/AIDS Strategic Plan
KAPC	Kenya Association of Professional Counsellors
MEP	Measures of Evaluation of Programmes
MOH	Ministry of Health
NACC	National Aids Control Council
NASCOP	National Aids and Sexually Transmitted Infections Control Program

NGO	Non Governmental Organizations
PASCO	Provincial Aids and sexually transmitted diseases Coordinator
PMO	Provincial Medical Officer
PWHA	People With HIV and AIDS
RCQHC	Regional Centre for Quality Health Care
STI	Sexually Transmitted infections
UNAIDS	United Nations Program of HIV/AIDS
SGM	Support Group Meetings
VCT	Voluntary Counselling and Testing

OPERATIONAL DEFINITIONS

Acquired immune deficiency syndrome: A Combination of illnesses caused by the Human Immunodeficiency virus that weaken the immune system(MOH,2007).

Balanced diets: A meal containing all nutrients in adequate proportions to ensure nourishment of the body. Diet refers to amounts and kinds of food and/or drink taken by a person.

CD4 Cells: White blood cells which are part of the immune system destroyed by HIV. Normal levels are between 500-1200. When CD4 count is high (>500) people are generally well. When CD4 count is low (<200) people are said to be immuno-suppressed and can acquire opportunistic infection. The situation affects their quality of life of a person.

Clients: The term referring to PWHA when they are in the Comprehensive Care Clinic vicinity.

Comprehensive care: Encompasses the complete package of care offered to PWHA includes care offered by doctors, nurses, nutrition educators, physiotherapists, occupational therapists, spiritual care givers, family and friends.

Counselling; A relationship through which an educator helps a client to make decisions and plan appropriate actions to their diet plans.

Dietary/Nutritional counselling: A sub process of nutrition education which involves the applications of principles of counselling to help clients make decisions and plan actions to address food and nutrition issues arising fro HIV infection.

Effectiveness of nutrition education; The ability of clients with HIV/AIDS to put into practice their acquired knowledge of nutrition education through carrying out the critical

nutrition practices outlined by the National Aids and Sexually Transmitted Infections Control Program.[1]

Nutritional education: Encompasses passing information to clients about the importance of nutrition, providing diet counselling and nutrition education materials that reinforce message about healthy eating and teaching skills essential for making dietary change. This includes information on how to sustain the behaviour change. In this research the term encompasses nutrition counselling.

Nutrition educators: Those individuals trained as nutritionists and charged with responsibility of passing on nutrition and health related information to clients in the Comprehensive Care Clinics through nutrition education and diet counselling.

Nutritional educational materials: Refers to those educational support materials, nutritional educators refer to during the nutrition education session for their clients and also those given to clients for further self reading, of interest are those recommended by the Ministry Of Health for use in the Comprehensive care Clinics (listed in Appendix 8).

Nutritional Status: An estimated measurement of the extent in which individuals physiological needs for nutrients are being met. The measurement is derived through calculation of Body Mass Index, using the following proportions, (Weight in KG/Height in M^2).

People With HIV/AIDS (PWHA): Those individuals infected by the Human immunodeficiency virus and may also have developed the condition, Acquired Immune Deficiency Syndrome (AIDS).

[1] Outlined on page 19, under title "Nutrition education and HIV/AIDS".

Quality nutrition education: Refers to nutrition education which is expected to result in improved nutrition understanding at individual level, ensure PWHA are respectfully treated and that nutrition educators are competent to empower their clients to make choices consistent to the clients own socio-economic empowerment. Greater satisfaction with nutrition education should translate to improved attendance rates to nutrition education sessions which would lead to improved dietary practices

Quality of Life: Quality of life is good when there is minimized burden of illness and enhanced efficiency of care for PWHA.

Snacks: Food or drinks readily available, eaten without further preparation, and are usually consumed in between meals.

Household: One or a group of people with or without family relationship living together with the person with HIV/AIDS, sleeping under the same roof and sharing other house facilities for a period of at least four days in a week throughout the year and eating from a common pot prepared within the household.

ABSTRACT

As early as 2003, The Greater Horn of Africa Capacity Development Initiative in Nutrition had already identified nutrition in HIV/AIDS as an area of capacity development urgently needing attention. The Government of Kenya in collaboration with multilateral and bilateral agencies spearheaded the development of the "Kenya National Guidelines on nutrition and HIV/AIDS" for use in the Comprehensive Care Clinics for harmonised nutritional strategies.

This non intervention cross-sectional study was carried out to analyse the nutrition education offered in the Public Comprehensive Care Clinics. Its objectives were to examine the nutrition education in the clinics and establish the nutrition education support materials being used. Levels of awareness of the roles of diet in the management of HIV/AIDS by clients in the clinics were also explored and perceptions of both the nutrition educators and their clients on the nutrition education offered were sought.

One hundred and fifty two clients infected with the HIV/AIDS virus and five nutrition educators in three clinics were interviewed. Data was collected using structured pre-tested and modified questionnaires, focus group discussions and observations. The client's dietary diversity was determined through the Individual Food Dietary Diversity questionnaires.

The results indicated that generally more females than males attended these clinics and a majority of the clients (93.4%) had some formal school education. The clients attending

the clinics were relatively young adults with a mean age of 35.7 years (SD=8.17). The BMI were within the normal limits for majority of the clients (64%). Correlation Analysis and Analysis of Variance tests did not reveal any significant relationship ($p>0.05$) between BMI and the clients socio-demographic characteristics. There was a significant association $p<0.05$ ($p=0.001$) between perceptions of nutrition education and knowledge of key nutritional practices for People with HIV/AIDS. The Individual Food Dietary Diversity Questionnaire (mean score=7) revealed that consumption of foods by the clients was not very diversified implying their diets were likely to be nutritionally deficient.

Though nutrition educators expressed satisfaction with their work they were frustrated by lack of adequate tools, insufficient materials, heavy workloads and lack of private space to carry out nutrition education sessions. The recommended nutritional guidelines, information, education and communication materials were not available in the clinics and accordingly they had not been used in the nutrition education sessions.

The study concluded that the nutrition education services offered to People With HIV/AIDS in the public Comprehensive Care Clinics are inadequate. The finding led to the recommendation that Ministry of Health should address the issues of understaffing of nutrition educators in the clinics. There is also need for a concerted effort to frequently monitor the provision of nutrition education in the clinics to ensure adherence to the stated government protocols and harmonised intervention strategies. In addition nutrition educators should be meticulously trained on application of guidelines and protocols in the management of nutrition for their clients.

CHAPTER ONE

1.0 INTRODUCTION

1.1 Background to the study

HIV/AIDS remains the most challenging health problem for care providers in Sub-Saharan Africa. Medical nutrition therapy and nutrition related educations are among the components of the total health care provided to people with Human Immunodeficiency Virus (HIV) and Acquired Immune Deficiency Syndrome (AIDS). Nutrition education has become the basic concept in provision of care for People With HIV/AIDS (PWHA) to improve their nutrition, health, quality of life and duration of survival.

The Kenya National HIV/AIDS Strategic plan for the period covering the years 2005/6 and 2009/10 has outlined its major goal as "To reduce the spread of HIV/AIDS and improve the quality of life of those infected." Among the priority areas highlighted are access to effective services for those infected and nutrition education which is to be offered in the Comprehensive Care Clinics (CCC) which were established in 2005. It targets that by the year 2010; at least 75% of PWHA in Kenya would have received nutritional education and counselling both at health facilities and community levels (NACC, 2005)

AIDS is a combination of illnesses caused by the retrovirus HIV that weakens the immune system. The virus is slow acting and impairs the body's defence system over a period of time. The amount of time it takes from when HIV infects the body until it

becomes full blown AIDS depends on the general health and nutritional status of the person before and during the time of HIV infection (FANTA, 2001). Good nutritional status increases resistance to infection and disease, improves energy levels and thus makes a person generally stronger and more productive. Immune impairment caused by HIV leads to malnutrition which compounds immune impairment contributing to rapid progression towards AIDS. Low nutritional status in people with HIV implies faster progression towards AIDS due to weakened bodies, which cannot fight infection.

Nutritional management of HIV/AIDS aims at nutritional education, lifestyle counselling and food supplementation. Nutrition education, thus become a crucial component of nutrition support services necessary in maintaining health. This education also forms a critical component of the total health care provided to PWHA. It is imperative that the education be conducted in such a manner that PWHA see its fundamental role in their wellbeing so as to achieve maximum compliance in their dietary behaviours. If successfully done it is hoped that it will promote compliance to acceptable diets, improve antiretroviral drug efficacy and manage side effects of the drugs. There is need to identify effective methodology and resources which could be used in diet counselling to improve nutritional education.

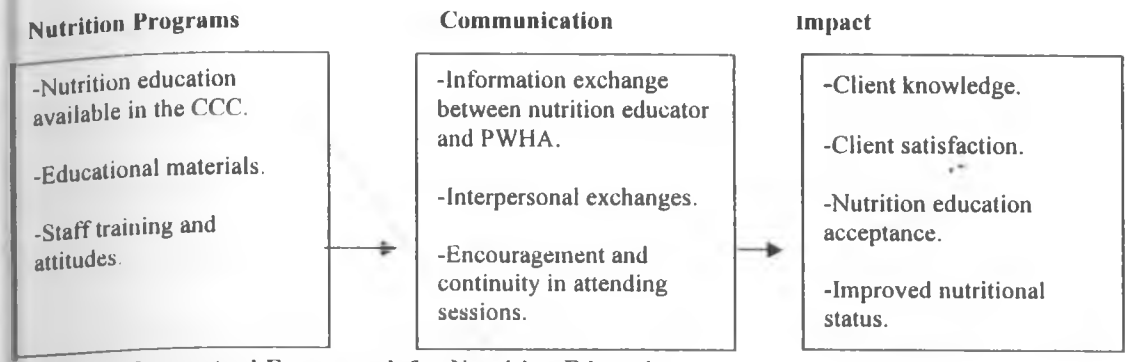


Figure 1. Conceptual Framework for Nutrition Education

Adapted and modified from "Quality of Care Conceptual Framework" (MEP, 2001, Page 4)

PWHA seem to have some nutrition information but majority appear to lack the knowledge to help them make the best choices in regard to food selection. NACC (2005) pointed out that information, education and communication materials crucial in successful education were rarely adapted to local languages and to compound this was the fact that the materials were not available to those who need them in rural Kenya. The numbers of trained nutritionists in the health centres offering nutrition education in the comprehensive care centres is limited, indirectly implying low levels of political commitment to the importance of nutritional care among clients by the Government of Kenya.

Quality nutrition education should lead to improved nutrition education at individual level and ensure PWHA are respectfully treated. Nutrition educators should be competent to empower their clients to make choices consistent to the clients own socio-economic empowerment. Greater satisfaction with nutrition education should translate to improved attendance rates to nutrition education sessions which would lead to improved dietary practices. Effective nutrition education must serve the clients' needs.

1.2 Statement of the problem

Nutrition education for PWHA is a critical area in management of HIV/AIDS. After the initial Voluntary Counselling and Testing (VCT) in the health centres, clients testing HIV positive are referred to the CCC to get comprehensive health care and are encouraged to have continuous health monitoring and get nutrition education among the services provided. In the preliminary visits, what is considered as comprehensive nutrition education is routinely offered to the clients by the nutrition educators.

A significant shortcoming is the way nutrition education sessions are being carried out. There appears to be lack of nutritional education support materials and the nutritional protocols to be used as reference to successful client nutrition education are seemingly not being applied. The nutrition educators do not appear to have adequate information and teaching support materials, that is, HIV/AIDS guidelines, counselling cards and the recommended wall charts and handouts to carry out this exercise satisfactorily. They also do not seem aware that the MOH has released National nutrition guidelines and nutritional protocols to be used as a reference to successful client nutrition education. In addition during follow up visits nutrition education is being given on "Ad Hoc" basis. That is, those clients perceived by the nutrition educators as "being really in need" of nutritional advice, due to their declining nutritional status, using BMI as an indicator are singled out for the nutrition education living out their healthier looking counterparts. Those who appear healthy are then left at risk of declining nutritional status which could have been adequately managed if the educators not left them out. Underbackke, Mcbride

and Spencer (2006) have already identified time as a significant barrier to providing nutrition education.

There are sixty six listed CCC based in both private and public health units in Kenya and NASCOP who are in charge of them have only a total of fifty trained and registered nutritionists countrywide, which translates to an estimate of about six nutritionists for every province at the time the study was conducted. There is no information in which of the CCC these nutritionists operate from.

To be effective, nutrition education should be a continuous process for all PWHA despite their disease stage. Continuous education needs some form of curricula, information and communication materials and also specific information delivery techniques. Pre study observations established that the current techniques in conducting the nutritional education seem to be at the discretion of each nutrition educator.

1.3 Justification of the study

Though nutrition education is an integral part of the nutrition support services for PWHA, current research has mainly focused on the role of nutrition in virus transmission to help keep the virus in check, but very little information exists on the frequency, accuracy and regularity with which information on healthy nutrition practices for PWHA is disseminated to them as the process plays a major role in determining if there will be a positive change in their nutritional behaviours and an overall improvement in their quality of life. It is well accepted that many PWHA have some information on the

importance of nutrition to their health, but lack of systematic exposure to nutrition education makes them unable to manage their diets more effectively.

As early as 2003, Regional Centre for Quality of Health Care (RCQHC) had organised a number of regional actions to support countries in East and South Africa to develop needed policies and guidelines to provide nutritional care and support for PWHA. The applications for the guidelines included developing materials for in-service and pre-service training on nutrition and HIV/AIDS

By 2006, The Kenya Nutrition Guidelines for PWHA had already been introduced for use in the CCC and A Tool Kit for Service Providers in the CCC had been developed to supplement the use of the guidelines use in the CCC. There is need to find out the extent of utilisation of the guidelines and application of the nutrition education protocols outlined in the tool kit. It is important to find if they are being used in tandem with the national cohesive fight against the virus in the CCC.

1.4 Aim of the study

The study sought to describe the nutrition education sessions in the CCC and to identify perceptions by both PWHA and nutrition educators on the nutrition education process carried out in the public CCC in Kenya. Of interest was the utilisation of the Kenyan nutritional guidelines and education protocols in provision of the nutrition education.

1.5 Purpose of the study

The purpose of this study was to generate more information and data which could be applied in;

- Providing suggestions on how nutrition education could be offered to all PWHA who turn up in the CCC despite their nutritional status, as per the nutrition guidelines.
- Improvement of the nutrition education session in the CCC and better adherence to the nutrition education guidelines and protocols guiding provision of nutrition education in the CCC.

1.6 Research questions

This study sought to answer the following questions;

- What is the perception of the nutrition education session in the CCC by both PWHA and nutrition educators?
- Are the education materials perceived as useful in supporting the nutrition education session by the nutrition educators and PWHA?
- Is the exposure to nutritional education at the CCC for PWHA reflected in their dietary practices?

1.7 Objectives of the study

1.7.1 General objective

The broad objective of the study was to asses the nutrition education process in the CCC, establish the usefulness of the educational materials used in the process, explore levels of awareness of the roles of diet in management of HIV/AIDS and examine the perceptions of both the nutrition educators and their clients to the nutrition education offered.

1.7.2 Specific objectives

1. To asses the association between nutritional status and the Individual Dietary Diversity practices of PWHA.
2. To establish the availability and usefulness of the education materials earmarked for use during the nutrition education sessions.
3. To examine if the messages directed at PWHA in the materials, had been adapted to the local situation.
4. To determine the extent of the utilization of the "Kenyan National Guidelines on Nutrition and HIV/AIDS" in the nutrition education session by nutrition educators.
5. To establish if there was a significant relationship between the nutritional status of PWHA and their socio-demographic characteristics.
6. To examine the perceptions on the nutrition education sessions by both the nutrition educators and PWHA.
7. To asses the knowledge PWHA have about role of food in relation to their condition.

1.8 Study hypotheses

The study tested the following hypotheses;

1. There is no association between the nutritional status and Individual Dietary Diversity practices by PWHA.
2. There is no significant difference in the nutritional status of PWHA and socio-demographic characteristics.
3. Knowledge about role of foods by PWHA, is associated with positive perceptions of nutrition education by PWHA.

1.9 Expectations from the study

Results from the study will provide insight on to how the CCC are providing nutrition education to their clients in relation to the set nutrition education protocols. This information will;

- Assist the Government, Policy Makers, Non Governmental Organisations, Health institutions and other agencies dealing with Nutrition Education for PWHA to improve on policies concerning issuance of nutritional education to all PWHA and improve on reading materials/ handouts issued to clients to enable them understand and manage their dietary intakes in a better manner.
- Contribute to improved dissemination of nutrition information to PWHA leading to enhanced adherence to the key nutritional practices and improved nutritional status.
- Lead to better understanding of households and community in their ability to cope better with the nutritional requirements of PWHA

- Lead to harmonised nutrition information dissemination in all the CCC resulting in equality of information given to the clients.

1.10 Limitations of the study

- Only the adult clients attending the public CCC in Nairobi and the nutrition educators were included in the study .The researcher felt that comparison to the nutrition education being offered in the CCC managed by the private sector would have yielded more illuminating results, but It was very difficult to get permission to collect data from the privately run CCC due to the "confidentiality patient-practitioner clause in management of HIV" to compare with what happens in the public CCC.
- Given the short limited data collection period it was difficult to confirm if diets were indeed diversified as the researcher could only rely on clients recall where-us household meal serving observation would have been desired.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1: Nutritional support for PWHA

According to Piwoz and Prebble (1995), the goals of nutritional support programs for PWHA are;

- Developing better eating habits.
- Stabilizing weight loss.
- Preserving muscle mass.
- Preventing food borne illness.
- Managing AIDS related symptoms that affect food consumption and dietary intake.
- Providing nutritious food for AIDS affected families living in conditions of food insecurity.

The need for knowledge and improved skills to increase dietary management of HIVAIDS is clear and crucial (Kadiyala, 2004). Nutrition education involves teaching clients about importance of nutrition, providing education materials that reinforce methods about healthy eating and teaching skills essential for making dietary change. In addition it should provide information on how to sustain behaviour change. Improved education strategies will strengthen nutrition education and may be one of the ways of efficient diet management strategies. Nyankuru (2002) states that nutrition education is

an important tool for health and nutrition workers and can be used effectively towards improvement of health and nutritional status of the groups at risk. For the education to have any impact it should be linked to ongoing programs. Everyone infected with the HIV virus needs the services of a nutritionist soon after diagnosis to ensure their dietary intake is adequate to support their health. The nutritionists help them to develop appropriate eating plans.

2.2 Nutrition education for PWHA

Amani and Soflei (2006) established that nutrition education alone through captivating educational programmes and materials improves the dietary practices among adolescent girls when the materials which are used capture the girls' interest and stimulates their motivation to improve their diets. A study by Olivares, Zacarias, Anrade, Kain et al (2005) study showed significant increase in nutritional knowledge among primary school children when school educators worked together with nutritional educators to design valid instruction materials. They demonstrated that successful nutrition education needs systematic content delivery, valid methodology, teaching and learning materials as well as educators' training programs. They suggested that educators should have a communication background to ensure effective content delivery.

Nutrition educators need to operate on the basis that new ideas, services or products can best be introduced if the intended beneficiaries see them as fulfilling their own aspirations and well being (Februharty, 2005). "People will not accept new ideas and technology designed solely from the expert's concepts" Gillespie as cited in (Februharty,

2005). Rothpletz (2004) also explained that nutrition educators should identify and target barriers to success and practice nutrition in the context of their patients lives. Rachier et al (2004) illustrates how client satisfaction is in direct proportion to the extent they feel that they are able to set the agenda during counselling process. There should be a greater involvement of PWHA in development of education materials strengthening their capacity to be involved effectively in their production. Visser, Labadarious and Labuschagne (2004) underscored the importance of balanced nutrition by showing how it bolstered the immune system and helped the body fight back against the ravages of disease.

Nutrition education should not be limited to PWHA, caregivers and the general public also need knowledge to help them better understand the changes in the dietary needs PWHA. Nutrition education should ensure PWHA are respectfully treated and that nutrition educators are competent to empower their clients to make choices consistent to their own socio-economic empowerment. (MEP, 2001) explains how greater satisfaction with nutrition education should translate to improved attendance to nutrition education sessions which would result in better dietary practices.

2.2.1 The nutrition education guidelines protocols

The Kenyan Nutrition Education Guidelines provide simple practical ways of assessing the nutrition status of HIV infected clients, their risk of malnutrition and assists the educators to identify locally appropriate and sustainable ways of increasing dietary intake

of PWHA (MOH, 2006 a). The guidelines aim at mainstreaming nutrition interventions in the national HIV/AIDS response for Kenya. Its goals have been listed as

- Improving nutrition, health, quality of life and duration of survival of people infected with HIV.
- Providing framework for informing policy makers and development partners of the plans for nutritional interventions for PWHA.
- To establish a consistent set of nutrition recommendations for PWHA in Kenya in order to improve their nutritional status, manage symptoms and promote response to medical treatment.
- Define actions that service providers should undertake in order to provide quality of care and support to PWHA at various contact points.

The Nutrition and HIV/AIDS Tool Kit For service Providers in the CCC, outlines the nutrition education protocols to be followed in provision of nutrition education to PWHA (MOH, 2005; NASCOP, 2007). It clearly states how the GATHER process should be used in provision of nutrition education to clients in the CCC. In this process the educator should;

Greet the client

Ask them about their nutritional problems

Tell clients about the alternative choices they have to address their nutritional problems

Help clients make informed choices

Explain fully the choices the client has made

Reassure client and give a return date to visit the clinic.

2.2.2 The education session

FANTA (2001) points out how chance HIV/AIDS infections might be reduced in individuals with good nutritional status. Emphasis is on sound nutritional knowledge on the role of food in the management and even before the onset of the disease. Piwoz (2004) recommended that nutritional counselling and support of PWHA should be a key area in management of HIV/AIDS. She suggested that nutritional management be done through counselling, home based care programs, community efforts and clinical services. Ojofeitimi and Fakande (1998) proved that nutritional counselling and food demonstrations led to a decrease in body weight losses for PWHA when implemented as soon as the individual was confirmed HIV positive.

Nutrition education is a crucial component of nutritional support services necessary to maintain health. AIDS is a condition caused by the retrovirus HIV. The virus is slow acting and impairs the body's defence system. Opportunistic infections caused by other viruses, bacteria and parasites further weaken the body. When a person starts having opportunistic infection then AIDS sets in. Fanta (2001) explains how the duration of time it takes for HIV infection to become full blown AIDS depends on both the general health and nutritional status before and during the time of HIV infection. Good nutrition increases resistance to infection and disease, improves energy, and thus makes a person generally stronger and more productive.

Immune impairment caused by HIV/AIDS leads to malnutrition and malnutrition compounds immune impairment contributing to rapid progression towards AIDS. PWHA

whose nutritional status is low are likely to progress faster to AIDS as their bodies are weak and cannot fight infection as compared to those who are well nourished, as their bodies are stronger.

2.2.3 Materials used in the education session

Though faced with the daunting task of providing nutrition education with limited resources, nutrition educators generally use printed materials to help them in educating their clients about their diets. Some of the print and audio visual materials that could enhance delivery of nutrition information are handouts, booklets, self learning guides, videos, food demonstrations and audio visual aids. Materials used in the education session could be obtained from MOH, NGO and also from the internet[2]. It is evident that there is scarcity of materials and gaps in the information on the materials available on nutrition and HIV/AIDS in Kenya, (Thuita, 2005). In order for clients to comprehend them, the information contained should be simple and easy to understand as difficulty in understanding the materials could limit their usefulness. Print materials should be simply written using words, idioms, and graphics familiar to the audience (Msimuko, 1988). The internet is an important source of current, varied and reliable nutrition information and counselling materials. According to the study by Underbakke, Mcbride and Spencer, (2006), the only shortcoming would be to verify the information which would be a time and effort consuming session.

[2] The recommended materials to be used in the public CCC in Kenya are outlined in Appendix 10

2.2.4 Nutrition educators

The nutrition educators' communication ability could determine the quality of the education they give their clients. In Kenya, The Kenya Association of Professional Counselors (KAPC) was formed in 1991 to promote counselling as a professional service. The services it offers include training and professional development among others. The services are usually controlled and directed by Ministry of Health. Improved educational strategies strengthen nutrition education and may contribute to efficient diet management strategies. Rachier, Gikundi, and Balmer, et al (2004) concluded that effective counselling results from professional counselling standards being maintained. They recommend that all those who have to counsel clients and patients should have a certificate in general counselling to give them basic grounds in both theoretical foundations and practical skills. Counselling should be client centred with emphasis on empathy, genuiness, and warmth and should focus on person as a unique singular individual.

Nurses and other health workers who care for persons with HIV/AIDS have their own emic view of stigma that may lead them to promulgate prejudice and discrimination toward their patients (Holzeimer and Uys, 2004). Although it is not clearly documented how the prejudice could affect their work, they nonetheless may fear that they could become infected with some of the opportunistic infections e.g. Tuberculosis.

Clients should be treated respectfully, in a friendly manner and should not be made to wait for more than 30 minutes before being attended to. If clients feel respected they are

more likely to continue coming back to the same clinics for follow up services (MEP, 2001).

Nutrition educators "burnout" could affect the educator-client relationship due to the sheer volume of clients who need to be counselled on a one-to-one basis. Kenner, Taylor, Dunn, Gruchow and Kolasa (1999) and Underbakke et al (2006) confirmed that limited time and patients' inability to obtain nutritional educational materials were barriers to successful nutrition education.

Rachier et al (2004) explained how the age of the nutrition educator could influence the perception of PWHA to the education process and message. In traditional African society people with problems would consult elders for advice. The consulted elders had to be trustworthy and wise if their advice was to be accepted. If the elders and their clients had a nurturing relationship, the client accepted the advice and acted upon it. Elderly clients living with HIV/AIDS may find it difficult to take advice from a younger nutrition educator.

2.2.5 The Comprehensive Care Clinics

History of The CCC

Inter-country collaboration to fight the HIV/AIDS epidemic brought together countries of the great lakes regions of Africa (Burundi, Democratic Republic of Congo, Kenya, Rwanda, Tanzania and Uganda). They created the Great Lakes Initiative (GLIA) in 1998

whose mission was to contribute to the reduction of HIV infections and mitigate the socio-economic impact of the epidemic. It developed regional collaboration and implemented interventions that added value to the efforts of each individual country. In 1999 when the GOK declared HIV/AIDS a national disaster, the National AIDS Control Council (NACC) was formed. This is the national coordinating authority for HIV/AIDS in Kenya. NACC facilitated the development of Kenya National HIV/AIDS Strategic Plan (KNASP) which provided an action framework for all HIV/AIDS interventions and aimed to improve quality of life of those infected and affected by HIV/AIDS. KNASP set out a multi-sectoral response to the epidemic jointly agreed by stakeholders within the government, civil society, private sector and development partners. National AIDS and STD Control Program (NASCOP) under the MOH is one of the sectors charged with management of HIV/AIDS. In their management efforts they set up CCC within both the MOH and private health facilities. NACC (2005) targeted that by 2010, 90% of all the hospitals in Kenya would have a CCC and that 75% of PWHA will receive nutritional education and counselling through these CCC. If these targets are met, the nutritional status of PWHA will be at least as good as that of non-infected people leading to improved quality of life.

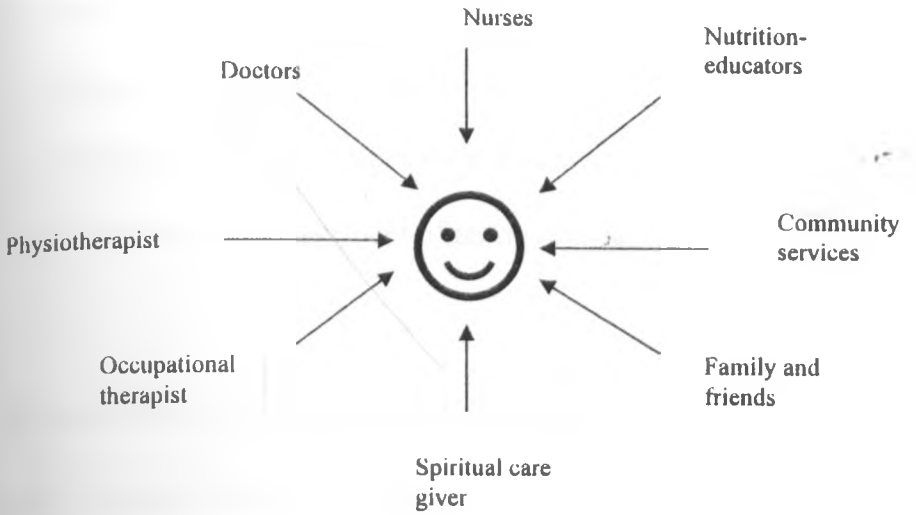


Figure 2. Comprehensive Care Team Managing A Patient

(Adapted from MOH, 2006 page 152)

Functioning Of The CCC.

CCC denotes a complete package of care for HIV infected people. It includes clinical, psychosocial, social, legal and nursing care. Nutrition educators should provide the following services in the CCC in Kenya (Adapted from NASCOP, 2006).

- Diagnostic counselling and testing for HIV/AIDS.
- Taking anthropometric measurements and reporting on nutrition indicators.
- Taking diet history and socio-economic assessment.
- Clinical assessment of nutritional deficiencies.
- Interpretation of biochemical assessment related to nutrition.
- Management of nutritional issues, symptoms and conditions associated with HIV/AIDS and dietary counselling.
- Food demonstration.
- Distribution of food and micronutrient supplements (where available).

- Distribution of nutritional handouts (where available).
- Connection of clients to support groups.
- Planning of feeding regimes for in patients.
- Collection and management of nutritional data.

2.3 Components of nutrition education

A healthy balanced diet is essential for a well functioning immune system and is the cornerstone of HIV/AIDS treatment in combination with antiretroviral medication, (Visser, Labadarios and Labuschagne, 2004). HIV/AIDS increases body's nutritional requirements and leads to opportunistic infections which are often associated with increased body's nutrition requirements and food intake. PWHA may experience difficulties with food intake due to mouth sores or poor absorption. They should be encouraged to eat smaller portions but more frequently (FANTA, 2001). A good diet could bolster the immune system and boost energy levels. Variety of food should be eaten to ensure that the body is getting adequate energy, protein and micronutrient needs. Balanced nutrition could help the body fight back against ravages of the disease and by maintaining body weight it can support drug treatment and prevent detoriation of the nutritional status. Foods selected for consumption should be those easily available to the households and they should be well prepared and cooked.

2.3.1 Nutrition education and HIV/AIDS

Knowledge of nutrition for PWHA should result in the following critical nutrition practices as listed in (NASCOP, 2005).

- Have periodic nutritional status assessments especially weight.
- Increase energy intakes through consumption of balanced diet and those severely malnourished clients with Body Mass Index (BMI) <16 should get supplementary food support, if available.
- Maintain high levels of sanitation, food hygiene and water safety as they are vulnerable to infections.
- Practice positive living behaviours including safer sex, avoiding alcohol, cigarettes, non prescription drugs and consumption of junk foods.
- Engage in physical activities or exercises which will stimulate appetite or health and also strengthen and build muscles.
- Eat small frequent meals as smaller portions ensure the stomach absorbs meals more frequently.
- Eat variety of foods to ensure sufficient nutrient intake.
- Drink plenty of clean safe water.
- Seek prompt treatment for all opportunistic infection and manage symptoms with dietary practices especially those that may interfere with food intake, absorption and utilisation.
- Manage drug-food interactions and side effects by following drug schedules and using dietary approaches to manage side-effects symptoms.

- Children under six months born to HIV positive mothers and are on replacement feeds should get supplement of 50,000 IU of Vitamin A per year and those on home modified formulae should receive additional multivitamins.

2.3.2 The nutrition education process

(Adapted from MOH , 2005)

The educators need to establish rapport with patients and find out about their well being.

1. After this they should find out how their food intake has been and the problems encountered in relation to food and diet.
2. Carry out nutritional assessment using current weight and BMI.
3. Share results of the biochemical and clinical analysis.
4. Identify nutritional needs and problems if any.
5. Explain to clients the alternative choices they have, to address nutritional problems.
6. Help clients set nutritional goals to address nutritional problems, and the goals need to be Specific, Measurable, Achievable, Realistic and should also be Time bound (SMART).
7. Help clients make informed choices to develop approaches and actions to attain the nutritional goals set.
8. Explain clearly to the client the choices he has made and ensure the client can explain the actions they will take.
9. Reassure and give client return date of visit.

2.4 Nutritional care for PWHA

Nutritional care and support of PWHA has the major goal of improving their health, quality of life and duration of survival. FANTA provides guidance of nutritional requirements for PWHA and nutrient implications of antiretroviral therapy. The organization has been at the forefront in helping countries adapt the guidance to their specific context through regional workshops and this initiative has culminated in the formulation of National Guidelines for PWHA for Kenya (MOH,2007). The guidelines have been adapted for use in the CCC to prepare nutritional care plans singling out nutritional planning and education. They assist the nutrition educators in the education session.

2.4.1 Energy requirements

HIV/AIDS increases the body's energy requirements, Piwoz and Preble (2000) and Daelmans (2005). Healthy adults require between 1990-2580 kcal per day, depending on age, sex, level of physical activity and physiological state. HIV infected adults not yet showing AIDS symptoms need 10% more energy which is an additional 210 kcal. Those showing the symptoms of AIDS need 20%-30% additional energy about 230-420 kcal more than those uninfected due to recurrent fevers and infections causing a rise in metabolic rates.

The recommended fat intake for a HIV infected person is the same as for healthy non infected persons, that is about 30-35% of the total energy needs. However in PLWHA certain ARVS or with "infection symptoms" like diarrhoea may require changes in the timing of quantity of fat intake until they are healed. (MOH, 2005)

2.4.2 Protein requirements

There does not seem to be sufficient evidence to support the need for increased protein requirements for PWHA over those uninfected (Daelmans, 2005). On average this should be between 12-15% which is equivalent to a range of 50-80gmdaily' (MOH,2005; FANTA, 2005) give a recommendation of 85mg/day for men and 72mg/day for women, an increase of 50% - 100%. Meat, dairy and legume sources should be combined to ensure adequacy of essential amino acids.

2.4.3 Micronutrient requirements

Consumption of Vitamin A, B6, B12, Iron and Zinc are important for building a strong immune system and fighting infection. FANTA (2001) alleges that lack of Vitamin A leads to faster progression from HIV to AIDS. Fawzi, Msamanga, Spielgeman and Ruilan et al (2004) explored how micronutrient status affected the progression of HIV and concluded that multivitamins significantly reduce CD4 counts and thus lowered the viral load in the body. Multivitamins can delay HIV progression but Fawzi, Msamanga, Spielgeman and Wei et al (2005) warn against micronutrient supplementation as an alternative treatment and instead recommend it as a complimentary to ART therapy. WHO recommends consumption of recommended daily allowances for both those infected and those not infected. Vitamins and mineral supplements are recommended for those only vulnerable to micronutrient deficiency. FANTA, (2001) indicate that vitamin B6; Niacin and B12 seem to improve survival and reduce disease progression. Jiamton (2003) and Wafaie, Fawzi, Msamanga and Spielgeman (2004) concluded that multiple

micronutrient supplementation may enhance the survival of HIV infected individuals but the exact impact of taking micronutrients by PWHA has not been identified.

2.4.4 Dietary fibre requirements

Intake of dietary fibre is recommended. These are foods that cannot be broken down fully by digestive enzymes as they are important for the health of the digestive system. For individuals with diarrhoea insoluble fibres from whole grains, cereals and legumes may make the diarrhoea worse.

2.4.5 Water and fluids

Water is crucial as it helps in nutrient transportation, removal of waste and regulates body temperature. It is recommended that PWHA take a lot of safe clean water, about eight glasses of 250ml per day. Use of clean water is important to avoid water borne infection. Tea, coffee, sodas and other related fluids should be consumed in moderation as they could interfere with food intake, nutrition and absorption (MOH, 2005).

2.4.6 Causes of reduced food Intake

- Reduced food intake could arise due to inability to eat due to gastrointestinal infections and physiological disorders like depression. In such cases clients should be advised on appropriate treatment of infections and get professional counselling.
- Poor attitudes and taboos about food. In this case nutritional education is crucial to clients and care givers to change the attitudes and taboos.

- Complex medical conditions and use of ARV. PLWHA should be assisted to plan for daily intakes of food that could help them meet their nutritional needs.
- Unavailability of food in the household or inability to prepare food due to illness. Nutrition educators could direct clients to sources of supplementary food support programmes.
- Voluntary intake is not possible due to disease. The nutrition educators will need help from other qualified health staff for enteral or parenteral feeding routes to stabilize and improve nutritional status of the client.

2.4.7 Dietary diversity

Dietary diversity is a qualitative measure of food consumption that measures and reflects a household access to a wide variety of foods and is also a proxy for the for the nutrient adequacy of the diets of individuals (FAO, 2007) and WFP (2007). Hartloy, Torheim and Oshaug (1998) pointed out that nutrients essential to meet nutritional requirements cannot all found in a single food item but must come from a diet composed of a variety of foods. The only exceptional food is breast milk which has all the nutritional requirements needed in the first early months of life. Individual Food Dietary Diversity (IFDD) scores aim to capture nutrient adequacy in diets and it has been suggested as a cost effective approach in measuring dietary quality at both household and individual level (FAO,2007). Hartloy et al (1998) indicated that diverse diets have been associated with prolonged longevity and improved health status. Hartloy et al(1998) study showed that in Mali, a highly diversified diet reflecting consumption of foods from different sources portrayed a diet of high nutritional quality. Gina, Pedro, Serghieri et al (2006) have

expressed the need for more comparable validation studies for rating dietary diversity scores. Both Gina et al (2006) and FAO (2007) point out the weakness of using IFDD. The reference period given for recording food intake is the use of one previous twenty four hours food recall period which does not provide information on the indication of an individual's habitual diet.

2.4.8 Hygiene, sanitation and environment

Nutrition education should address personal hygiene, sanitation, housing, environment and food handling practices that affect susceptibility to infection. Some of these practices are;

- Washing fresh fruits and vegetables using clean treated or cooled boiled water.
- Washing hands with soap before preparing and consuming food and after visit the toilet.
- Appropriate storage of food to prevent contamination
- Not consuming food which appears spoilt
- Maintaining kitchen hygiene
- Avoiding being in crowded places as it could lead to chance infections which PWHA are susceptible to.

2.4.9 Antiretroviral drugs and nutrition

Good nutrition will strengthen body's ability to fight diseases, reduce opportunistic infection and slow progression of HIV/AIDS. It also complements ARV action, improves medication efficacy and management of its side effects. Nutritionists need to watch out

for drug-nutrient interactions as some types of medicine will contribute to poor nutrition. Some side effects of ARV are;

- Reduced food intake.
- Reduced nutrient absorption and utilization in the body.
- Some foods when taken with ARVs may reduce drug effectiveness and worsen side effects of the ARVs.

An example of a specific food recommendation for the first line of ARV is;

- Zidovudine is best taken on an empty stomach, 30-60 minutes before the morning and evening meal. If the patient experiences stomach irritation the drug can be taken with food but never with a high fat/oil meal (MOH,2006 b).

Careful food selection and well planned meals can minimise side effects of drugs. The nutrition educators should explain to clients that knowledge of the drugs they are taking is essential so as to identify possible drug food association. Use of ARVs also requires drinking a lot of clean safe water and avoiding alcohol.

2.5 Evaluation of nutrition education in the CCC

The MOH, through NASCOP has embarked on a strategy to harmonize nutrition interventions within the continuum of care and support services for PWHA. There is need for systematic assessment, analysis and documentation of this strategy's coverage and success. Evaluation determines the worth of an intervention, strategy or policy (MOH, 2006 b). To asses the efficacy of the nutrition education component in the CCC, the following indicators could be used;

- Number of nutrition educators having a copy of the Kenyan National Guidelines on Nutrition and HIV/AIDS.
- Number of nutrition educators trained on the use of the guidelines.
- Number of nutrition educators who have adopted and continue to implement the guideline recommendations.
- Availability of Nutrition Education promoting materials such as educational pamphlets, counseling cards and information charts.
- Proportions of PWHA who receive monthly nutrition education sessions.
- Numbers of PWHA receiving the nutrition education in the CCC.
- Proportions of PWHA who report behaviour change in dietary diversity and frequency of consumption.
- Proportions of PWHA having normal BMI.

(Adapted and modified from MOH,2006 b)

2.6 Stigma and HIV/AIDS

Holzeimer and Uys (2004) explain that AIDS is stigmatized, as it is associated with stigmatized behavior e.g drug using, promiscuous behavior and homosexualism. HIV/AIDS still carries with it huge stigma and discrimination (Smith; 2000; Mfecane and Skinner, 2004; (Holzeimer and Uys, 2004). Fear and denial are common, particularly in developing countries where testing positive is tantamount to a death sentence (Smith, 2002). Those diagnosed with HIV are sometimes too frightened of the reaction of their neighbours, workmates and relatives to disclose their status but it is important to note that not all PWHA feel stigmatized. This results in PWHA not desiring to know their status

and could undermine the capacity to cope with the condition. This discrimination could delay entry into treatment plans and adoption of healthy lifestyles as PWHA would be unwilling to seek help or access resources.

2.7 Gaps in knowledge

Effective nutrition education is intended to empower PWHA to make dietary choices consistent with their socio-economic and physiological status. If PWHA are convinced with the nutrition education, they will adopt the message and the recommended dietary practices leading to improved quality of life. Effective education has to be given consistently following a specified curriculum. Though these concerns have been addressed in the National Nutritional Guidelines and have been adopted in the CCC there is no evidence that any monitoring and evaluation has been carried out in Kenya to find out if they are actually being adhered to.

There are also no standardized tools available to assist in evaluating and assessing an observation of the education session for PWHA as they take place in the CCC. This study will propose such a tool (Appendix 5) and use it to test its tenability. Other researchers are encouraged to use the tool to determine its efficacy.

CHAPTER THREE

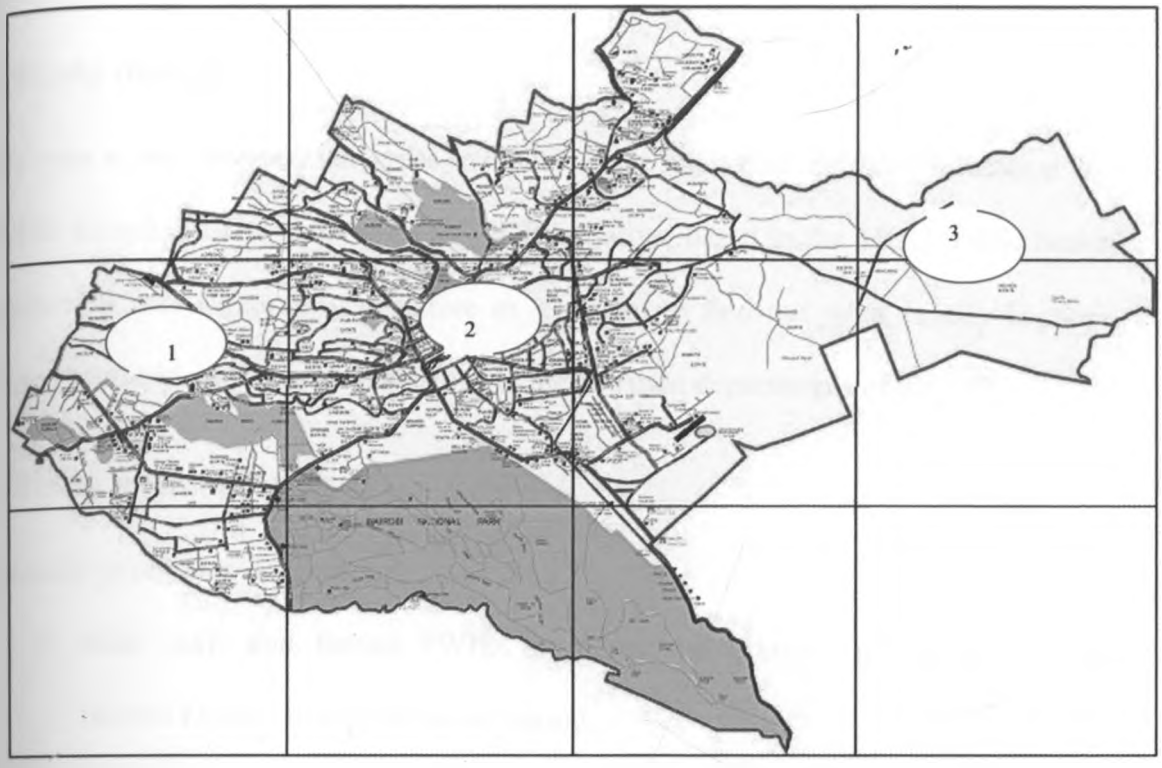
3.0 STUDY SETTING AND METHODOLOGY

This chapter describes the study setting, design, data collection instruments, procedures and data processing.

3.1 Study setting

Kenya is located in East Africa and lies between latitudes 4.21^0 N and 4.28^0 S and longitudes 34^0E and 42^0E. It is divided administratively into eight provinces namely Nairobi, North Eastern, Central, Eastern Coast, Nyanza, Rift Valley and Western.

Nairobi Province popularly referred to as Nairobi City and is bordered by Central Province to the north, Rift Valley Province to the south and Eastern Province to the east. The city covers an area of 684Km² and has varied topography with an average altitude of about 1661 meters above sea level. It is a cosmopolitan and multicultural city and is one of the largest and fastest growing cities in Africa. Currently Nairobi's' city population is estimated at 2,9490,11 with a population density of 4,230people/Km². Nairobi is administratively divided into eight divisions. **Figure 3** shows the map of Nairobi with the sampled division highlighted



Key:
1. Dagoretti Division
2. Nairobi Central Division
3. Makadara Division

Figure 3. Map of Nairobi With selected divisions highlighted

(Adapted from Nairobi City Council, Administrative Divisions, Internet Source)

The MOH has grouped all these divisions under three distinct administrative areas namely Nairobi East, Nairobi West and Nairobi North. The study was carried out in the Comprehensive Care Clinics based in public health centres in the randomly selected divisions. The comprehensive health care concept is a holistic approach towards the management of a person infected with HIV and they were set up as a NASCOP initiative to improve care for PWHA (NASCOP, 2006).

The selected CCC were in the Nairobi-Central, Dagoretti and Makadara Divisions of Nairobi District in Kenya.

3.2 Study design

This was a non intervention cross-sectional study analyzing nutrition education for PWHA attending CCC under the NASCOP initiative, based in the MOH public health facilities. It was exploratory in nature as it sought to find out what exactly happens during the nutritional education sessions in the nutrition departments of the CCC.

3.3 Study population

The study population consisted of;

- Adult male and female PWHA attending the Ministry of Health CCC in Nairobi District during the study period.
- Nutrition educators in the selected CCC in Nairobi District
- The recommended materials used during the nutrition education sessions in the CCC in Nairobi District (Appendix 8).

3.4 Sample size determination

The sample size was computed using the rates of HIV infections of the Kenyan adults. This was estimated at 7% (CBS,2003). The prevalence rates for HIV infections in Nairobi was 9.9%. The sample size for clients attending the CCC was determined on the basis of this prevalence rate in Nairobi, using the formulae by Fisher et al,(Wayne, 1991).

$$n = \frac{Z^2 (p*q)}{d^2}$$

where

n = was the desired sample size.

Z = Standard normal deviate, set up at 1.96 which correspond to 95% Confidence level.

P = Proportion of adult patients with HIV in Nairobi set at 9.9% and rounded of to 10% = 0.1

q = 1-p, estimated proportion of adults without HIV, q = (1-0.1) =0.9

d = Degree of precision desired set at = 0.05 for this study.

$$n = \frac{(1.96^2)\ (0.1x0.9)}{0.05^2}$$

n = 138 clients

Plus a 10% attrition = 138 x (10/100) = 13.8 rounded of to the nearest Whole number

The sample size was = 138 + 14 = 152 clients.

The selected facilities had nutrition educators and all were selected for the study. The recommended education materials (Appendix 8) and any other available materials used during the nutrition education sessions were also targeted for study.

3.5 Sampling procedure

NASCOP the body in charge of the CCC was approached to provide information on the public CCC in Nairobi and their locations. Multi stage sampling procedure was used to

select the CCC to be studied. The sampling procedure is outlined in **Figure 4.** Nairobi province was selected purposively because available records in NASCOP indicate that the nutrition education component of the CCC in Nairobi Province had been incorporated since early 2005[3] (NASCOP, 2005) but trainings were yet to carried out in the other remaining provinces. All the three MOH administrative health areas in Nairobi Province, that is, Nairobi-North, Nairobi West and Nairobi-East were also purposively targeted.

The three divisions from the three MOH administrative health areas were selected randomly using Simple Random Sampling. This was conducted for each MOH administrative area independently. Each division was assigned a number and these numbers were written on small pieces of paper which were folded and then dropped in a box. The box was shaken vigorously and the pieces of paper picked out randomly, the numbers picked were recorded. The randomly selected divisions were Nairobi-Central which had a total of two CCC, Dagoretti which had three and Makadara which had three CCC in Nairobi-North, Nairobi-West and Nairobi East Areas respectively.

Simple Random Sampling was again used to select the CCC from where the client sample population was drawn. This was done for each of the selected divisions independently. A number was assigned to the public MOH CCC in the division, these numbers were written on small pieces of paper which were then folded and put in a box. The box was shaken vigorously to ensure thorough randomisation. One piece of paper was picked for each district with the corresponding number selected being recorded. The

[3] NASCOP had already held trainings for nutrition service providers in Nairobi by 2005

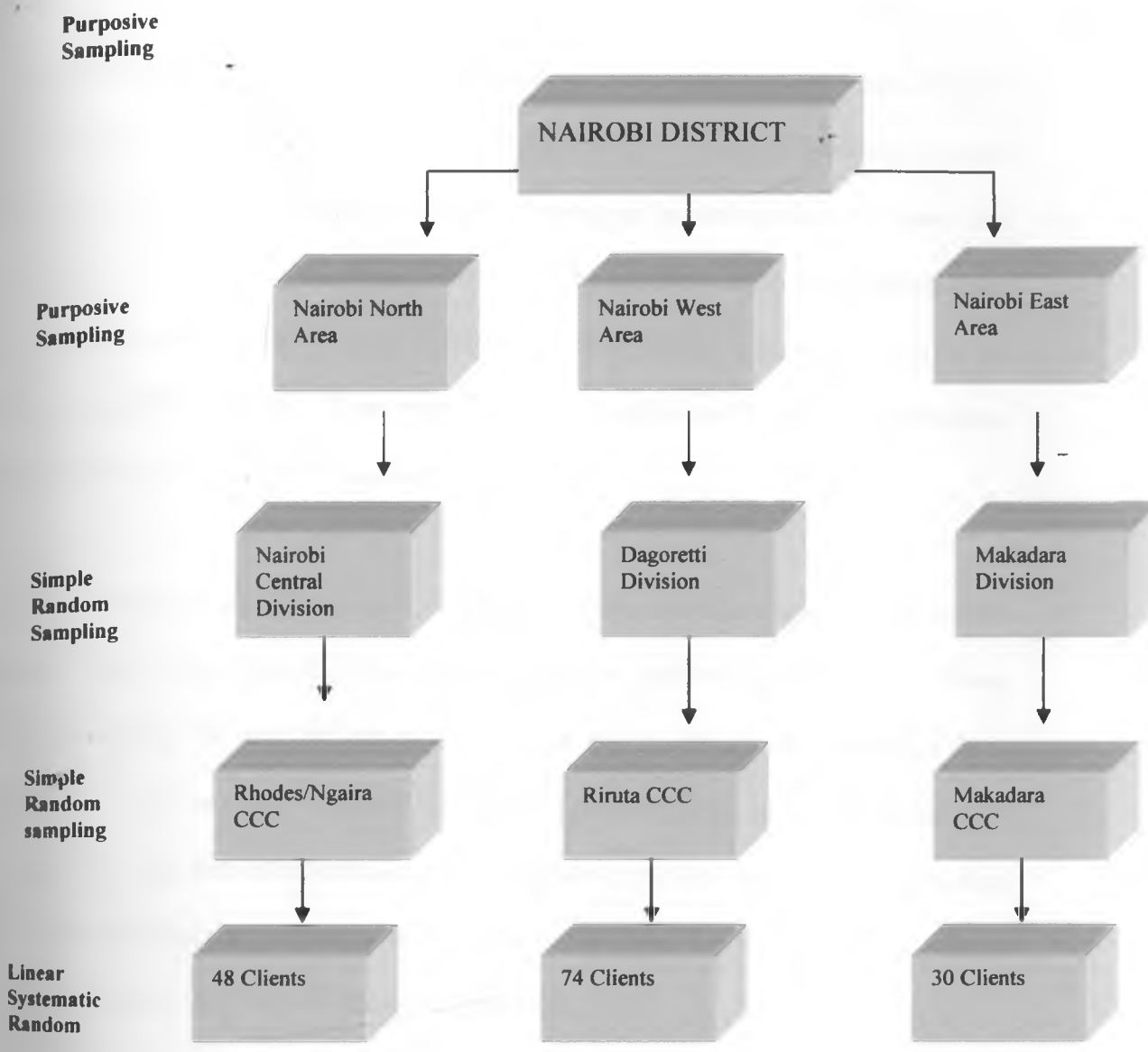


Figure 4. Schematic presentation of the Sampling Procedures to select clients.

Clients selection

No Specific registers indicating the total number of clients who had ever turned up for services in the CCC were available at the selected clinics. Monthly attendance records from January 2005 to August 2007 for those turning up for the services had been well documented. Clients were expected at the CCC during their clinic appointment days.

Clients selection

No Specific registers indicating the total number of clients who had ever turned up for services in the CCC were available at the selected clinics. Monthly attendance records from January 2005 to August 2007 for those turning up for the services had been well documented. Clients were expected at the CCC during their clinic appointment days. CCC appointments were given once a month for each client on specified days of the week for the different CCC. These were Monday, Tuesday and Fridays for Makadara, Rhodes/Ngaira and Riruta CCC respectively.

Attendance records from August 2006 to August 2007 showed that a total of 1212 clients honoured their once a month clinic appointments as outlined in Table 3.1. These comprised of 588, 384 and 240 clients from Riruta, Rhodes/Ngaira and Makadara CCC respectively. The average expected number of clients turning up for clinic services during a clinic day was calculated using these attendance records from August 2006-Aug 2007. Average attendance during a clinic day was 49 clients for Riruta CCC, 32 clients for Rhodes/Ngaira CCC and 20 clients for Makadara CCC.

Table 3.1 Average numbers of clients attending the three CCC from August 2006-August 2007

Comprehensive Care Center	12 months attendance by clients	Average monthly attendance by clients
Riruta	588	49
Rhodes/Ngaira	384	32
Makadara	240	20
Total	**1212**	**101**

Self weighting was done to ensure that sample selection was proportional. The following formula was used;

Riruta CCC Average attendance (49) / 100 x 152 clients = 74 clients

Rhodes/Ngaira CCC Average attendance (32) / 100 x 152 clients = (48.64) 48 clients

Makadara CCC Average attendance (20) /100 x 152 clients = 30 clients

Sampling frames were made up from the expected number of clients in the respective CCC for the specific clinic day.

Linear systematic random sampling was then used to select the clients eligible for the study. Only one client from the same household was eligible for the study to avoid information duplication. Clients on their first visits were not selected because of the high probability that they would not have received any nutrition education. Since questionnaire administration to the clients took an average of 20-30 minutes, only eight clients could be comfortably interviewed in a day because of the clinic hours which were between 9.00am and 12.00 noon, the daily expected number of clients was divided by eight to give the sampling intervals in each CCC. The first client on the list was selected randomly using a random number table and then each subsequent client after the calculated interval up to a maximum of eight.

Selection of nutrition education Materials

When the nutrition education component was introduced in the CCC the nutritionists in the CCC managed under the NASCOP initiative received training from NASCOP on how to utilise the Kenyan National Guidelines on Nutrition and HIV/AIDS for nutrition education of PWHA. Using the assumption that nutrition educators in Nairobi district had

received training on the guidelines use, all the nutrition educators in the sampled clinics were selected for participation in the study. The NASCOP recommended nutrition education supplementary materials listed below;

- Nutritional counselling cards for PWHA
- Information sheets on diet-drug interactions
- Information sheet on food and nutrition problems for PWHA
- Kenyan Nutrition guidelines for PWHA

and other available printed nutrition education materials used during the nutrition education sessions were examined.

Selection of education sessions

Each client was expected to have a nutrition education session with a nutrition educator at the CCC every time they turned up for their clinic appointment. Due to heavy workloads in the other areas of the health centres the nutrition educators were not specifically stationed at the CCC. Appointments were made to observe the sessions when the educators indicated that they would be available. The first education session of the day in which the client consented to the observation process was observed. One education session at each CCC was observed.

Selection of nutrition educators

All the nutrition educators who were available in the selected CCC were targeted for study.

3.6 Data collection procedure

3.6.1 Pre preparation

The investigator made preliminary visits to the relevant authorities within the Ministry of Health to inform them of the intended research project and acquire permits to facilitate the study. These were The PMO, PASCO, DMO, DASCO and Districts and the City Council Health Department. Familiarisation visits were then made to the CCC to find out about the general set up and functioning of the respective CCC.

3.6.2 Recruitment and training of field assistants

Two field assistants, who are conversant with both English and Kiswahili languages, were recruited to assist in data collection. Priority was given to Volunteers from the CCC which were not part of the sample. They had to be college graduates and preference was given to those with a nutrition background who had volunteered for at least two months prior to the study period. Two field assistants were trained for two days to assist in the study. The purpose, procedure and duration of the study was explained to them. Training was centred on taking anthropometric measurement (weights and heights), sampling methodology, conducting focus group discussions and questionnaire administration[4]. Although the questionnaires were in English at times they had to be administered in Kiswahili and so emphasis was on accurate translation to avoid distortion of the meaning of the questions.

The enumerators were briefed on the need to;

- Create rapport and be courteous to clients

[4] See Appendix 6 for summary of Enumerators training curriculum

- Be ethical in Research
- Fill responses clearly
- Avoid the Hawthorn and Courtesy biases
- Probe to get more information from the respondents

3.6.3 Pilot study

Following the training, fifteen randomly selected clients and two nutrition educators from Kangemi Health Centre CCC in the Nairobi West Area, participated in the pilot study to pre-test the tools of data collection in order to;

- Pre-test appropriateness and clarity of questions
- Estimate the amount of time that would be taken in administering the questionnaire
- Help in pre-coding.

One nutrition education session was also observed.

The results were then discussed by the enumerators and researcher and necessary modifications and adjustments were made.

3.7 Data collection

3.7.1 Research instruments and tools

Five instruments were used to collect data both qualitative and quantitative data. These were;

- A semi-structured clients questionnaire
- An individual dietary diversity questionnaire

- A nutrition education staff questionnaire
- A guide for focus group discussions
- An observation guide for the nutrition education session

The individual Dietary Diversity Questionnaire was attached to each client's questionnaire.

The tools used were,

- A Detecto Scale (a beam balance scale recommended for taking height/Weight Measurement in the CCC)
- Flip charts, boards and markers

The outlined activities listed in **Box 1** were carried out during the data collection process.

Box 1. List of activities by specific objectives

Objectives	Activities	Type of Instruments used
1. To asses the association between BMI and the dietary diversity practices PWHA.	-Measure heights and weights -Use EPI-INFO computer program to analyse BMI. -administer and analyse clients' IFDD questionnaire -Analysis through SPSS computer program	-DETECTO scale -Individual food dietary diversity questionnaire
2. To establish the availability and usefulness of the nutrition education materials used during the nutrition education process.	-Observe presence of materials in CCC and nutrition education sessions. - evaluate perception of materials by clients and nutrition educators -Participants to discuss usefulness during FGD -Rate and usefulness of materials by nutrition educators	Individual Food Dietary Diversity questionnaire -FGD guide. -Client structured questionnaire.
3. To examine if messages directed at PWHA in the materials had been adapted to the local situation	-Content analysis of education materials during FGD by participants. -FGD on PWHA to find if pictures used are adapted to the local situation	-FGD guide. -Recommended nutrition education materials
4. To determine the extent of utilization of the National Nutrition Guidelines in the education process	-Observation of education process to observe use of recommended GATHER system -Observation on availability of the nutrition guidelines	-Observation guide - -Nutrition staff questionnaire
5. To establish if there was a significant relationship between the nutritional status of PWHA and their socio-demographic characteristics	-Apply questionnaire to PWHA -Analyse clients nutritional status --Analyse relationships between clients nutritional status and their socio-demographic characteristics.	- Clients structured questionnaire
6. To examine the perceptions of the nutrition education sessions by both the nutrition educators and PWHA.	-Apply questionnaire to PWHA -Apply questionnaire to nutrition educators. -Conduct FGD on PWHA. -Data analysis	-Clients structured questionnaire. -Nutrition staff questionnaire -FGD guide.
7. To asses the knowledge PWHA have about role of food in relation to their condition	-Apply questionnaire to PWHA -Data analysis	

3.7.2 Clients questionnaire administration

Following client selection, a structured questionnaire (Appendix1) was administered to 152 clients attending the three CCC. This questionnaire sought information on the clients;

a) Nutritional status through BMI;

b) Demographic information; their age, sex, occupation, residence, language spoken education levels, marital status and family size.

c) Average total individual income and estimated amounts spent on buying food monthly.

d) Rating of the nutritional education process and materials used during the sessions.

3.7.2.1 Variable definitions

Nutritional status

Nutritional status for the clients was measured through calculating their BMI, using the formulae : BMI=Weight(Kg)/Height (M^2). Clients with BMI<18.5kg/m^2 were classified as underweight, those with BMI =18.5- 24.9 kg/ m^2 were classified as normal weight. Those with BMI > 25.0 kg/m^2 were classified as overweight.

Dietary diversity practices

Dietary diversity was measured through IFDD questionnaire scores, (Appendix 2). The maximum expected score was 18(100%). Scores of below 9/18 (50%) indicated that foo consumption was not adequately diversified scores of above 50% meant food consumption was adequately diversified.

Availability of nutrition education materials

This was measured through observing the presence of the listed recommended nutrition education materials (Appendix 8) in the CCC premises and in their use during the nutrition education sessions.

Usefulness of education materials

This was measured by asking nutrition educators to rate the recommended materials on how useful they perceived them to be on a scale of one to five, ranging from 1=Very useful to 5=unnecessary (Appendix 4). Ratings from 1-3 indicated that the materials were perceived as useful and 4-5 indicated that they were not perceived as useful.

Adaptation of materials to the local situation

This was measured through ability by clients to identify the pictures in the recommended education materials and relate them to what happens in their day to day lives. If clients were not able to identify the pictures then the materials were deemed as not adapted to the local situation.

Extent of utilisation of the Kenya national nutrition guidelines

This was measured through observation of the nutrition education session to find out if the outlined GATHER process in provision of nutrition education was being adhered to.

Socio demographic characteristics

This was measured through finding out the clients' age, gender, marital status, income, and education levels (Appendix 1).

3.7.2.2 Taking anthropometric measurements

A Detecto Scale consisting of both a weighing scale with a height-meter attached was used to take weights and heights readings. The measurements of heights and weights were taken twice, independently and their average calculated. The ages and sex of the clients were also recorded. These measurements were converted into nutritional indices and Body Mass Index, WHO (2000) indicators were used as reference points. Any BMI below 18.5kg/m^2 was classified as underweight while 18.65- 24.9 kg/ m^2 were considered normal weight. BMI over 25.0 kg/m was overweight.

3.7.2.2 Individual Food Dietary Diversity Questionnaire

An Individual Food Dietary Diversity Questionnaire (Appendix 2), formulated by FAO was used to investigate food intake variations. The questionnaire aimed at identifying the typical frequency of consumption of foods and was used to estimate consumption of a variety of nutrients. Diversified food intake gave a high probability that adequate nutrients were being consumed and it acted as indicators of effective nutrition education. Scores above 50% indicated that the clients food consumption was diversified and scores below 50% indicated it was not very diversified..

3.7.3 Conducting observations

An observation checklist (Appendix 5) was developed and was used to collect information on the nutrition education sessions. Direct observations (passive participant) where the researcher was present at the scene of the nutrition education session but did not engage in the activity were conducted on three education sessions. One observation was carried out in each CCC. Observations were conducted in the rooms normally used

by the educators in provision of nutrition education. It should be noted that none of the rooms used were specifically for nutrition education. Educators had to look for any vacant room in the health facility. The other facilities in the rooms were therefore not observed as they were not designed for use of nutrition education sessions. Also the main intent of the researcher was to observe the client provider interaction to find out if the recommended GATHER process outlined in the nutrition guidelines was being followed during these sessions.

Acceptance was sought from both the nutrition educator and client before the sessions were observed.

3.7.4 Conducting FGD

FGD guides (Appendix 4) were used to study reactions to the nutrition education sessions and content of supplementary educational materials used during the sessions. Two FGD were conducted. PWHA were selected randomly from the CCC during Support Group Meetings (SGM), those selected were not part of the interviewed clients. Also invited were members of NGO's involved in HIV/AIDS, The VCT counsellors and nutrition educators from other CCC apart from those sampled. Letters of invitation to the meeting were sent out one week in advance before the meetings. The meetings were held in Jericho and Rhodes/Ngaira Health Centres for the first and second FGD consecutively. The meetings lasted one to one and a half hours and were conducted on Sunday afternoons to allow for maximum participation. The NASCOP recommended materials for supplementing the nutritional education process were put on display around the room and participants given twenty minutes to scrutinise them. During the discussions, the principal investigator explained the objectives of the research to the participants and their

views sought on both the process and materials. The resulting information was recorded on flipcharts by the research assistants and discussions then followed from the recorded information.

3.7.5 Nutrition educators questionnaire administration

Nutrition educator's questionnaires were self administered (Appendix 3). They aimed at;

a) Finding out if the educators had undergone additional trainings especially those related to HIV/AIDS since their deployment.

b) Finding out problems they encountered during the nutrition education sessions in the CCC.

c) Their perceptions to the nutrition education process and their attitudes to their jobs.

3.7.6 Data quality control measures

A Pilot study was conducted to test appropriateness of the pre-redesigned questionnaires, tools and methodology. The modifications were effected. The field assistants were closely supervised and worked together with the investigator through out the data collection period.

To maintain high standards in data collection, the assistants were trained in taking anthropometric measurements with emphasis on correct methodology to enhance accuracy and validity of results. The DETECTO SCALES used were initially calibrated

by personnel from the Ministry of Trade and Industry- Weights and Measures department. The scales were also checked daily against standard weights measurements for consistent and accurate readings. This was done to ensure instrumental errors due to faulty equipment were avoided. Bias and errors in recording were avoided by adjusting scales before weighing each client. To minimise intra-observer errors two independent readings were taken for height and weight and the average recorded for accuracy. The margin of error allowed between the two measurements was 0.1cm for height and 0.5gm for weight.

During the training period for the field assistants, the questions in the questionnaires and guides, were discussed and appropriate English and Kiswahili translations agreed upon until all the questions could be uniformly translated. This was necessary to ensure that questions would be posed to respondents in the same manner.

Since the observer was in the room during the education sessions, the "Hawthorne Effect" may have caused both the nutrition educators and their client to act differently than if they were alone. The 'Hawthorne Effect' was controlled by the observer using a lab coat and sitting at an unobtrusive position during the observation of the nutrition education sessions in order to blend in with other care providers especially the nutrition educator, The observer avoided looking at both the educator and the clients in the eye and sat as quietly as possible without fidgeting, rustling papers and did not offer any comments during the session.

Because 'Clients are likely to report that they feel satisfied with services, and will not speak negatively about clinic or clinic staff' (MEP, 2001), the researcher and assistants controlled this 'Courtesy Bias 'by frequently reassuring clients that whatever they said during the interviews would not jeopardize their care at the clinic as it was confidential. Verification of data on administered questionnaires was done to minimise errors. Debriefing sessions were conducted daily after data collection to analyse for errors, omissions and discrepancies. Reviews were done to ascertain questionnaires had been properly completed. Where data was incomplete the questionnaire was discarded and another respondent selected as it was impossible to re-trace the clients during the brief study period.

3.7.7 Data entry and cleaning

Information obtained from the completed Clients questionnaire were verified, coded and edited to ascertain accuracy and completeness and then entered into a computer. Data was grouped according to the data collection sites and category of the respondents. Statistical Package for Social Sciences (SPSS) version 12.0 and EPI-INFO computer software were used to process and analyze the quantitative data. The numerical data and the opinions of the respondents were analyzed using quantitative and qualitative analysis procedures to obtain a balanced analysis and uphold freedom of individual expressions. Frequencies and means for both non-continuous data and continuous data were obtained prior to statistical analysis. Outliers were flagged but information was not analysed to avoid distorting data. Qualitative data on the other hand was organized according to themes, categories and patterns.

3.7.8 Data analysis procedures

Data analysis was both descriptive and analytical. Analysis for the client's questionnaire and their dietary diversity practices was mainly through EPI-INFO (6.04) and SPSS (12.01). Anthropometric measurements, weight/height indices were compared to those set by WHO to classify the different BMI levels. (WHO, 2000)

Table 3.2: Classification of weight/height to BMI

Classification	BMI (kg/m^2)
Under weight	< 18.5
Normal weight	18.5 –24.9
Over weight	> 25

Coding of data was done to develop meaningful categories which would enable establishment of emerging patterns into meaningful categories.

Descriptive analysis of quantitative data included percentages, means, frequencies and cross tabulations. These data were presented in form of tables, charts, graphs. Cross tabulations were used to identify relationships among variables and significance tests from chi-square were used to determine associations and their strengths. P value of statistical significance was set at $p<0.05$ (95% CI). Qualitative analysis was used for the nutrition educators questionnaires, FGD and observation guides.

Information from the FGD was recorded on flipcharts and field notebooks. Descriptive analysis was then carried out and verified. Content analysis of the flipcharts and

recorded contents was then carried out and the resulting information was synthesised and summarised. Constant responses to the questions were identified, grouped and interpreted with major differences being identified.

3.7.9 Problems and constraints encountered in the field

In conducting the study the following problems were encountered.

1. It was very daunting to visit CCC's as those in charge of them were very suspicious and hesitant to allow the investigator to conduct the study despite clearances from the relevant offices. There was a lot of suspicion from the CCC managers in the health facilities and matters were not helped with the lackadaisical attitudes the PWHA had against researchers. They claimed too many studies had been conducted on them but they were yet to see there benefits. They made it plain that we were a nuisance to them and a few declined to participate.
2. Most of the respondents were uncomfortable being asked about there occupation and income levels, despite assurances that the information was confidential. They felt that this information would jeopardise their chances of receiving any form of aid in future.
3. The investigator found the exercise a health risk as most of the clients had been diagnosed with TB yet the spaces availed for interviews were not well ventilated.

CHAPTER FOUR

GENERAL STUDY RESULTS

4.0 INTRODUCTON

The results are both quantitative and qualitative. Descriptive results have been presented in tables, graphs and charts and mainly give information on the demographic characteristics of the clients and their nutritional status. Information from the observation of the nutrition education sessions and FGD have been described qualitatively

4.1 Client and nutrition educators population

Monthly attendance records for the period August 2006 to August 2007 were used to calculate the average expected number of clients turning up for services during clinic appointment days in a month. As previously indicated in Table 3.1, a total number of 1212 clients turned up for their CCC appointments during this period. These were 588 clients from Riruta, 384 clients from Rhodes/Ngaira and 240 clients from Makadara CCC. Through proportionate sampling, a total of one hundred and fifty-two CCC clients were interviewed. They comprised of 74 from Riruta CCC, 48 from Rhodes/Ngaira CCC, and 30 from Makadara CCC. To avoid duplication of information due to the assumption that members of the same household were liable to visit the same CCC and receive similar information from the same nutrition educator, only one client from a household was eligible for the study.

Five nutrition educators were also interviewed and three nutrition education sessions in the CCC observed. Two FGD discussions were conducted, one In the Nairobi East Area

at Ofafa Jericho Health centre CCC and another in the Nairobi Central Area at Rhodes/Ngaira Health Centre CCC.

4.1.1 Demographic, health and socio-economic characteristics

4.1.1.1 Clients distribution by age

Figure 5 depicts the ages of the interviewed clients which ranged from 19 to 67 years. The mean age was 35.7 years (SD=8.17). The outlier client age (67) was excluded from the age analysis to avoid skewing and distortion of data. The clients from Rhodes/Ngaira CCC were slightly older with a mean age of 37 years compared to those from Riruta CC with mean a mean age of 35.1 years and Makadara CCC with mean age 35 years.

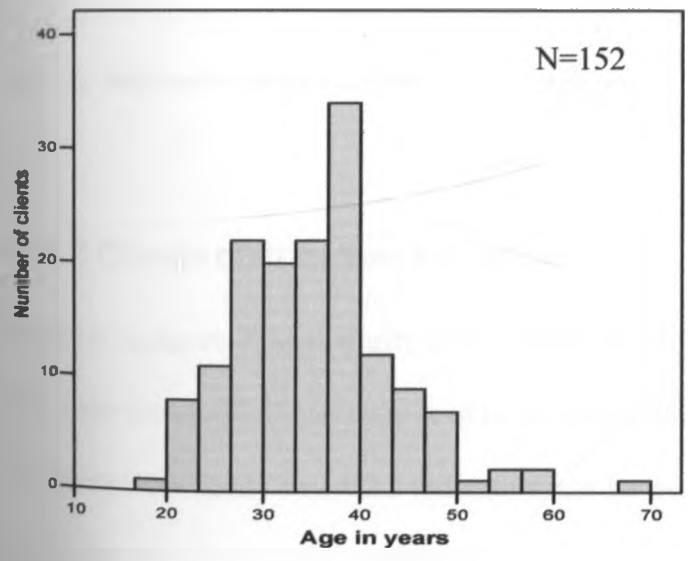


Figure 5: Distribution of the CCC clients by age

Figure 6 illustrates the clients' sex distribution by their age categories. The highest category was females in the age category between 26 to 34 years. There were more female than male clients in all the age categories except for the category above 43 years where there were slightly more male than the female clients were observed.

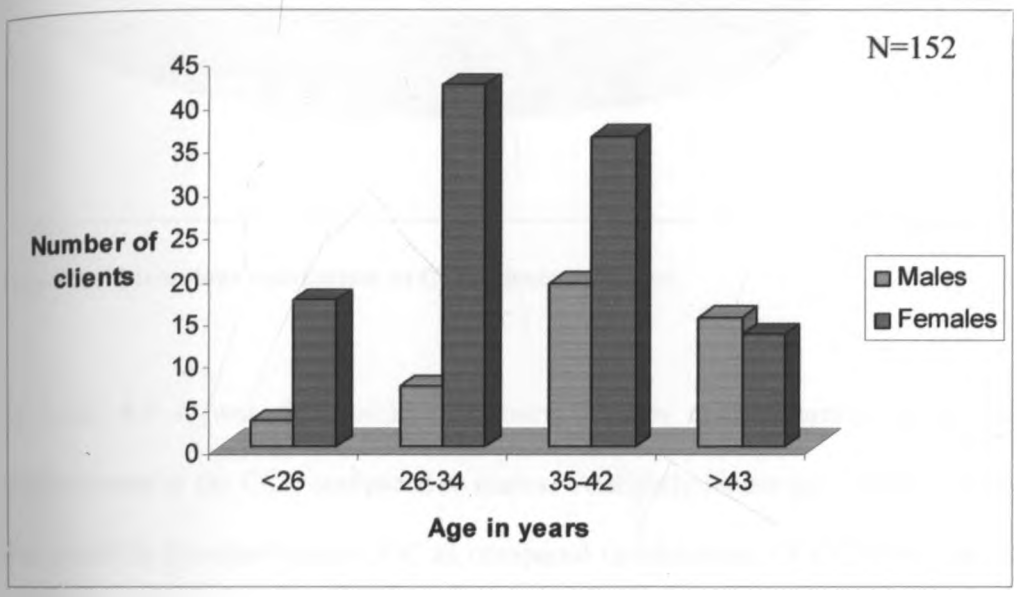


Figure 6: Distribution of the CCC clients by age and sex

4.1.1.2 Clients distribution by gender

As shown in figure 7 the majority of the clients turning up for their appointments at the CCC were female 71.1% as compared to the males 28.9%. The male to female ratio of the clients in the study was 1:2.5 indicating that for every 10 male clients coming to the CCC there were 25 female counterparts.

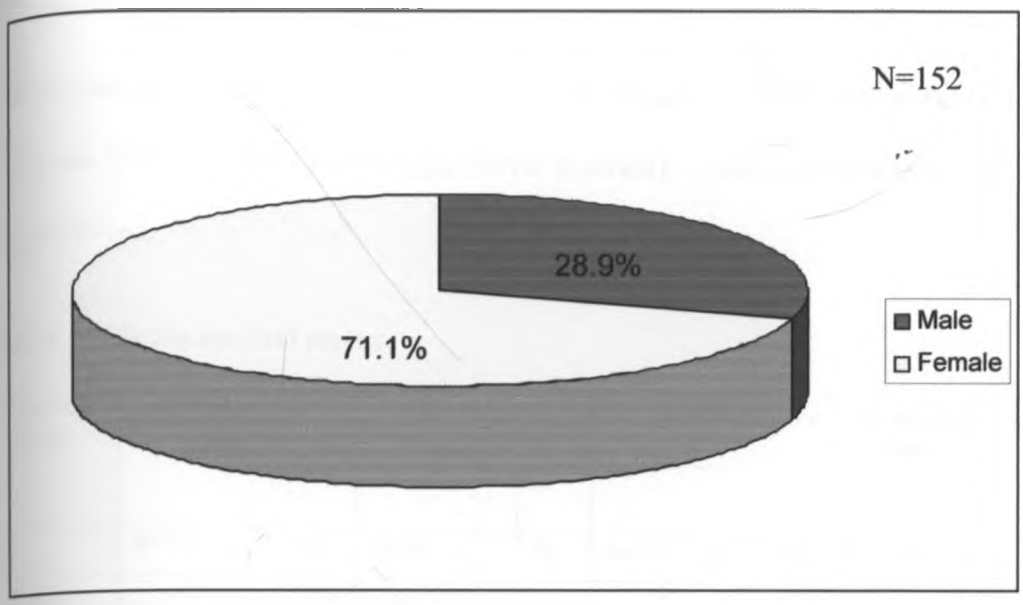


Figure 7: Percentage distribution of CCC clients by gender

In Table 4.1 it was discernible that more females clients turned up for their clinical appointments at the CCC compared to males. A slightly higher percentage (39.6%) of males was noted in Rhodes/Ngaira CCC as compared to Makadara CCC(23.3%) and Riruta CCC (24.3%).

Table 4.1: Distribution by gender among clients visiting the various CCC

Gender	Riruta CCC		Makadara CCC		Rhodes/Ngaira CCC		Total %
	N=74	%	N=30	%	N=48	%	N=152
Male	18	24.3	7	23.3	19	39.6	28.9
Female	56	75.7	23	76.7	29	60.4	71.1

4.1.1.3 Clients marital status

Slightly more than half of the clients, 51.3% were married as indicated in Table 4.2. Thirty one (20.4%) clients were single (never married), 17.8% were divorced and 10.5% were widowed.

Table 4.2: Clients marital status

Marital Status	Riruta CCC		Makadara CCC		Rhodes/Ngaira CCC		Number of Clients	Total
	N=74	%	N=30	%	N=48	%	N=152	%
Single	12	16.2	8	26.7	11	22.9	31	20.4%
Married	40	54.2	12	40.0	26	54.2	78	51.3%
Divorced	14	18.9	7	23.3	6	12.5	27	17.8%
Widowed	8	10.8	3	10.0	5	10.4	16	10.5%

4.1.1.4 Clients educational levels

Only 6.6% of the clients had no formal schooling as presented in Table 4.3. A large percentage had formal education with the majority 48.7 % having attained primary level of schooling, 19.7% had secondary school level and 25% had post secondary school education level.

Table 4.3: Clients education levels

Educational level	Riruta N=74	Makadara N=30	Rhodes/Ngaira N=48	Total N=152
	%	%	%	%
None	6.8	3.3	8.4	6.6
Primary	55.4	36.7	45.8	48.7
Secondary	17.6	20.0	22.9	19.7
Post secondary	20.2	40.0	22.9	25.0

4.1.1.5 Clients income levels

Table 4.4 outlines the clients' income levels. Majority of the clients 28.3% had income levels between KES1000 and KES5000, which was below the average basic monthly wage of KES 6000 for workers in Nairobi (CBS, 2005). About half of the clients, 55.3% earned an income of less than KES 10000 which are considered as income for the low income group (CBS, 2005). Only one client was recorded with an income of above KES 30,000. Those classified as having no income 11.8%, were dependents without their own income sources. Despite assurances of confidentiality of the information collected, thirty five (23%) of the clients declined to respond to indicate their income level. ANOVA did not establish any significant associations between BMI and income $p>0.05$ ($p= 0.464$).

Table 4.4: Clients' income levels

Income in KES	Number of Clients N=152	%
Less than1000	17	11.2
1001-5000	43	28.3
5001-10,000	24	15.8
10,001-20,000	8	5.3
20,001-30,000	6	3.9
Over 30,001	1	0.7
No Income	18	11.8
No Response	35	23

4.1.1.6 Clients Body Mass Index

The cut of points for BMI previously indicated in Table 3.2(p.52) based on WHO (2000) classifications, were used to categorise clients. The mean BMI for the clients was

22.1(SD=3.3) for the male and 23.1 (SD=4.3) for the female clients. As depicted in Figure 8 the data showed that the BMI for most of the client respondents (64%) were normal, within the average range of 18.5kg/m^2 and 24.49 kg/m^2. Eighteen percent of the respondents were overweight with a body mass index of between 25.0 kg/m^2 and 29.99 kg/m^2 and 12% were underweight with below18.49kg/m^2. Six percent of the clients were obese with BMI>29.9 and 5.3% were wasted with BMI below 17.5.

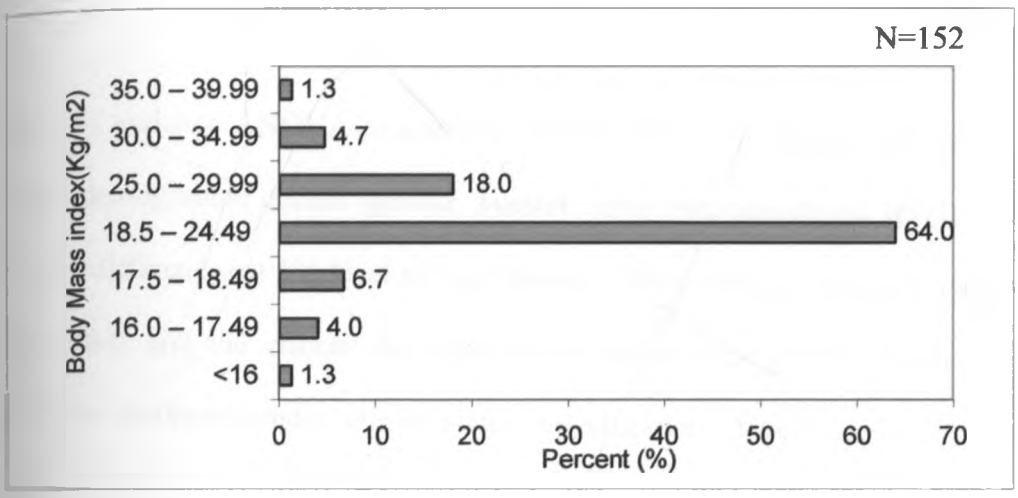


Figure 8: Body Mass Index of the Respondents

Data in Table 4.5 shows that 64% of the clients had their BMI falling within the normal ranges of 18.5-24.9kg/m^2 with 24% being overweight and 12% underweight. In Riruta CCC 75% of the clients had normal ranges of BMI as compared to 43.3% in Makadara and 60.4% in Rhodes/Ngaira. Makadara CCC had the highest percentage of clients 43.3% who were overweight, while Rhodes/Ngaira CCC had the highest number of clients 14.6% who were underweight. A chi square analysis revealed a significant

association between BMI and target site $p<0.05$ ($P=0.026$). Clients in Riruta CCC had a significantly higher BMI and those in Makadara CCC had a significantly lower BMI.

Table 4.5: Cross tabulation of clients BMI by target site

Body Mass Index (BMI)	Target Site			
	Riruta (N=74)	Makadara (N=30)	Rhodes/Ngaira (N=48)	Total (N=152)
	%	%	%	%
Less than 18.5 kg/m^2 (Underweight)	9.7	13.3	14.6	12.0
18.5-24.9 kg/m^2 (Normal)	75.0	43.3	60.4	64.0
Over 25 kg/m^2 (Overweight)	15.3	43.3	25.0	24.0

Analysis of variance ANOVA to establish if there was a significant difference between BMI and demographic details (gender, marital status and educational level) showed no significant differences at 5% level of significance. There were no significant associations between BMI and the clients' demographic characteristics, $p\geq0.05$. Table 4.6 shows ANOVA for BMI and gender, marital status and educational level.

Table 4.6: Analysis of variance (ANOVA) for clients BMI and selected demographic characteristics.

Demographic characteristics	F-value	P-value
Gender	0.721	0.397
Marital Status	0.643	0.589
Educational Level	2.380	0.072

Significance level $P<0.05$

Correlation analysis of age with BMI also did not reveal any significant relationship $p>0.05(p=0.550)$. There was no significant relationship between BMI and the socio-demographic characteristics.

4.1.1.7 Clients on antiretroviral (ARV) medication.

More than two-thirds of the clients (63%) were on ARV medication while 37% were not as illustrated in Figure 9. The mean BMI for those using ARV was 22.56 (SD=3.67) and for those not on ARV it was 23.41 (SD=4.74). The other medications listed by those not on ARV medications were multivitamins tablets and Septrin, which is a standard prophylaxis used to reduce the impact of HIV/AIDS infection on the body (MOH,2007).

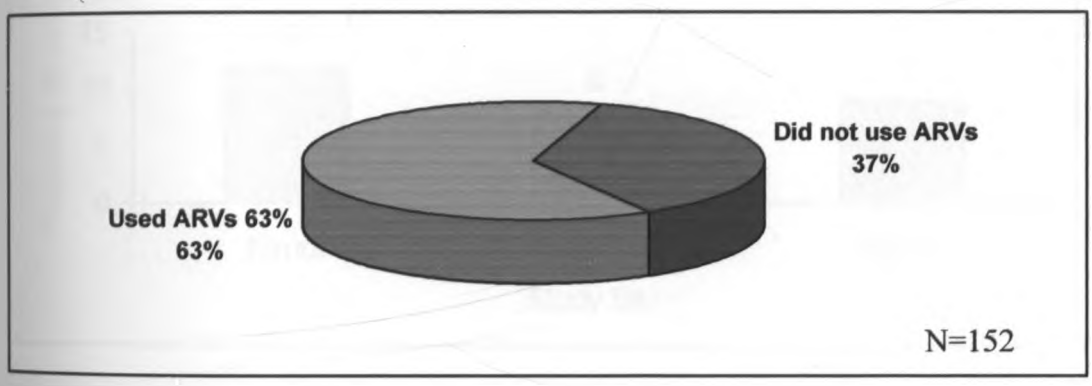


Figure 9: Respondents' who used ARVs

Analysis of variance did not establish any significant differences in the mean BMI and use of ARV, $P>0.5$.

4.2: Nutrition education in the CCC

4.2.1 Number of visits to the Comprehensive Care Centres (CCC's) by clients

Clients were given monthly clinic appointments to come to the CCC for checkups. They were also encouraged to report to the CCC any time they felt unwell. In a year it was expected that they would have honoured at least twelve appointments. The data showed that there were both new and old clients at the CCC as the number of visits to the CCC since January 2006 ranged from 2 to 36 times. The average overall visits to the CCC since a client was registered at the CCC was 10 times (SD=7.9). Figure 9 showed that on average most clients in Riruta had visited their CCC 12 times, in Makadara 8 times and in Rhodes/Ngaira 9 times.

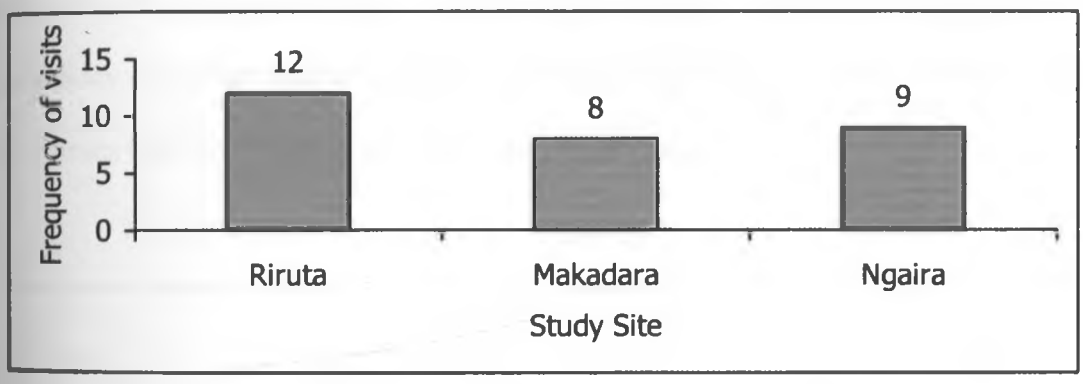


Figure 10: Average number of times clients had come to their respective CCC

4.3 Access to nutrition educators

Clients were asked if they had ever discussed their nutritional issues with a nutrition educator during their (client) visits to the CCC. Figure 10 shows that almost all the clients (93%) indicated they had not while only 7%, five clients in Riruta, four clients in Makadara CCC and one client in Rhodes/Ngaira CCC had discussed with a nutrition educator during their visits.

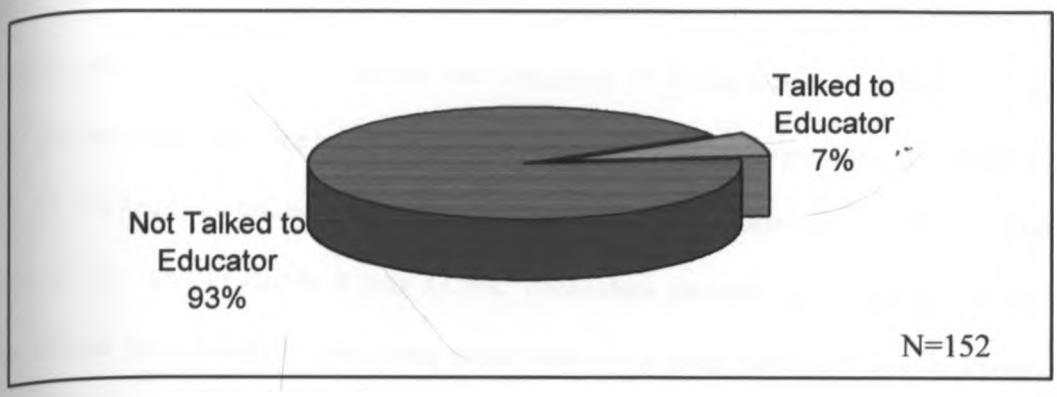


Figure 11: Respondents who had discussed nutritional issues with a nutrition educator during their visit to the CCC

Responses as to the number of times they had discussed about their nutritional issues at the CCC with persons other than the nutrition educators are displayed in Figure 12. Majority of the clients, 43.2%, had discussed only once with someone else other than the nutrition educator once while 25.7% said they had never discussed about their diets with somebody else other than the nutrition educator in the CCC. Only 2.7% had discussed four times with 8.1% having discussed more than five times.

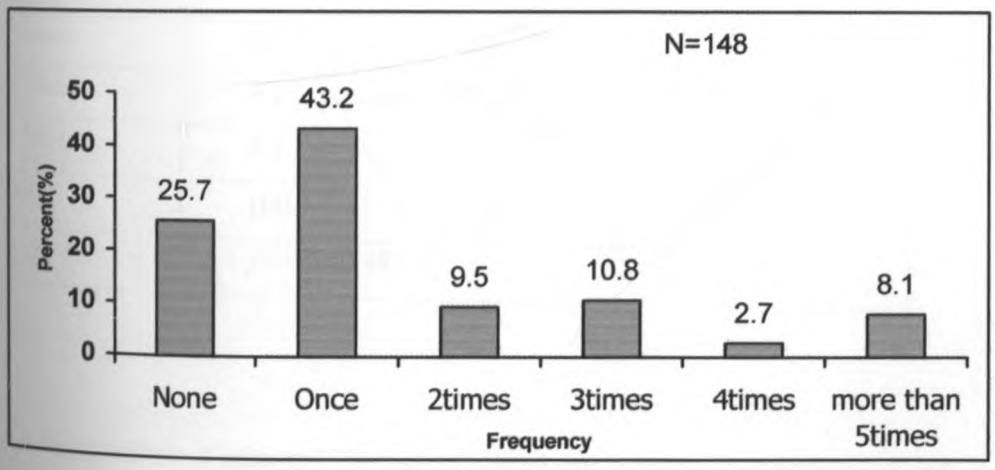


Figure 12: Frequency of being talked to by others (non-nutrition educators) in the CCC about their diets

Out of the 152 clients interviewed, 148 had never discussed their nutritional issues with a nutrition educator. Table 4.7 shows the frequency of being talked to about their diets by other persons other than the nutrition educators in the CCC by target site. In Rhodes/Ngaira CCC 53.2% had been talked to by a non nutrition educator at least once whereas in Makadara it was 41.5% and in Riruta it was 37.5%. These data showed that in almost all the target sites, clients were talked to only once about their diets ever since they begun attending the CCC. In Rhodes/Ngaira 29.8% of the clients indicated that they had not discussed with anybody in the CCC about their diets compared to 27.6% and 22.2% in Makadara and Riruta CCC respectively.

Table 4.7: Frequency by target site, of being talked to about diet at the CCC by other persons other than the nutrition educator in the CCC ever since client begun attending clinics.

Frequency	Riruta (N=72)	Makadara (N=29)	Rhodes/Ngaira (N=47)
	%	%	%
None	22.2	27.6	29.8
Once	37.5	41.4	53.2
2times	12.5	3.4	8.5
3times	13.9	6.9	8.5
4times	4.2	3.4	0
> 5times	9.7	17.3	0
Total	100	100	100
N=148			

Since a big number of clients 93% had indicated that they had not discussed with a nutrition educator in the CCC about their diets as shown in Figure 10 and data in Table 4.7 shows that clients had discussed with somebody else in the CCC about their diets, the researcher was

interested in knowing who else gave nutrition advice to the clients within the CCC. The clients were asked if they could remember with whom they had ever discussed their nutritional issues. As depicted in Figure 13, out of the 112 clients who could remember, 37% said they had discussed with the CCC doctors, while 19% had discussed with the VCT counsellor during pre-test for HIV/AIDS counselling, 17% received nutrition information from the attending nurses and 6% from members of their HIV support groups which met monthly in the CCC. Twenty one percent said they had discussed with a nutrition educator.

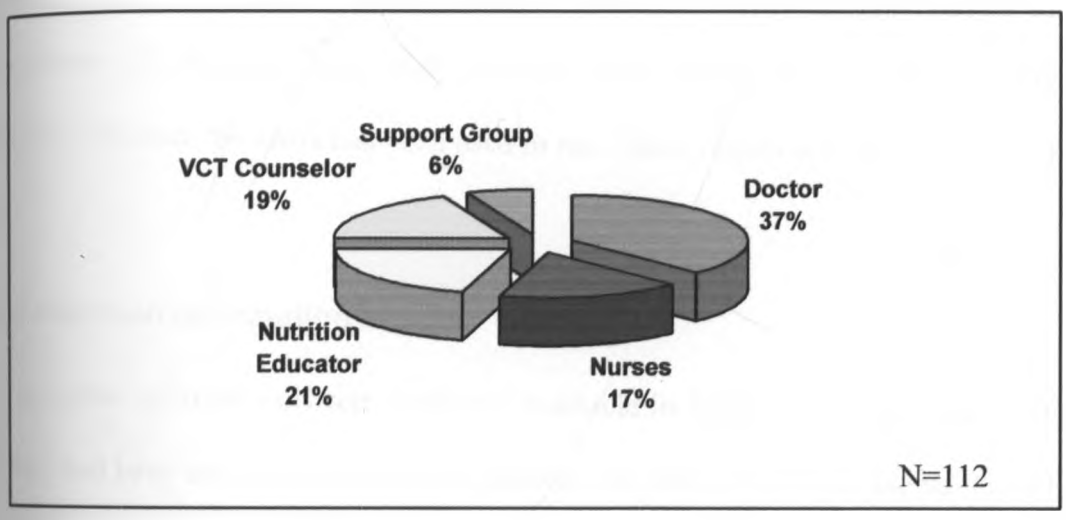


Figure 13: Other persons in the CCC who had talked to clients about their diets

4.4. Use of recommended nutrition education materials during nutritional education sessions

The clients were asked if any of the recommended IEC materials originating from the (MOH), NASCOP section designed for nutrition education in the CCC had been used in any of the education sessions irrespective of who was giving the talk. The IEC materials of interest were the;

- Nutrition counselling cards for PWHA
- Nutritionally educative brochures for PWHA
- Nutritional Information Sheet outlining diet-drug(ARV) interactions or
- Nutritional Information Sheet outlining measures to be undertaken to deal with general food and nutrition problems for PWHA

4.4.1 Nutrition counselling cards

These cards were available in all the three CCC they but had been used during nutrition education sessions for only 9.9% of the clients, for almost three quarters of the respondents (71.7%) the cards had not been used, 18.4% of the clients could not remember whether the cards had been used or not. These results are summarised in Table 4.8.

4.4.2 Nutrition information sheets

The nutrition information sheets were only available in Riruta CCC. As shown in Table 4.8 they had been used during education sessions for only 7.9% of the clients. For a large majority 73.7%, none of the two information sheets had been used and 28% 0f the clients could not remember if they had been used or not.

4.4.3 Issuance of nutrition education brochures to PWHA

NASCOP has already developed several educational brochures on diets, food and nutrition for PWHA which were supposed to be given to clients in the CCC to supplement and reinforce nutrition education information. As summarised in Table 4.8, only 6.6% of the clients had been issued with at least one of these brochures during their

visit to the CCC, 74.3% had never been issued with any brochure and 29% could not remember whether they had been given the brochures or not.

Table 4.8: Use of Nutrition counselling cards, information sheets and brochures during nutrition education for PWHA

Use of Counselling cards	**N=152**	**Percent %**
Yes	15	9.9
No	109	71.7
Could not remember	28	18.4
Use of Information Sheets	**N=152**	**Percent %**
Yes	12	7.9
No	112	73.7
Could not remember	28	18.4
Issued with at least one brochure	**N=152**	**Percent %**
Yes	10	6.6
No	113	74.3
Could not remember	29	19.1

Brochures in English, Kiswahili and vernacular languages containing nutrition information for PWHA were available from NASCOP, IEC section. Table 4.9 shows, of the clients who had been issued with the brochures 3.9% had received the brochures in English and 2.6% in Kiswahili languages.

Table 4.9: Languages used in brochures issued to PWHA

Language used in brochure	N=152	Percent%
English	6	3.9
Kiswahili	4	2.6
Not received brochures	142	93.4

As summarised in Table 4.10, the clients were asked which language they would prefer to be used on the brochures if they were to be available. More than half the respondents (55.9%) said they would prefer them to be in Kiswahili and 41.4% did not mind if they were in either English or Kiswahili. Only 2.6% preferred that they be in vernacular languages and data showed they had attained primary level of education.

Table 4.10: Preferred languages in brochures

Preferred language in brochure	N=152	Percent %
Kiswahili	85	55.9
Either English or Kiswahili	63	41.4
Vernacular	4	2.6

4.5 Perception about nutrition education offered in the CCC

Clients were asked about their perception on how useful the nutrition education offered in the CCC was irrespective of who had offered it. Out of the 111 of the clients who had received some form of nutrition education since January 2006 in their respective CCC, more than two-thirds (66%) of them felt it was very useful, 27% felt it was useful and only 4 % of the clients felt it was not useful. Three of the clients were undecided whether it was useful or not. The results are reflected in Figure 13.

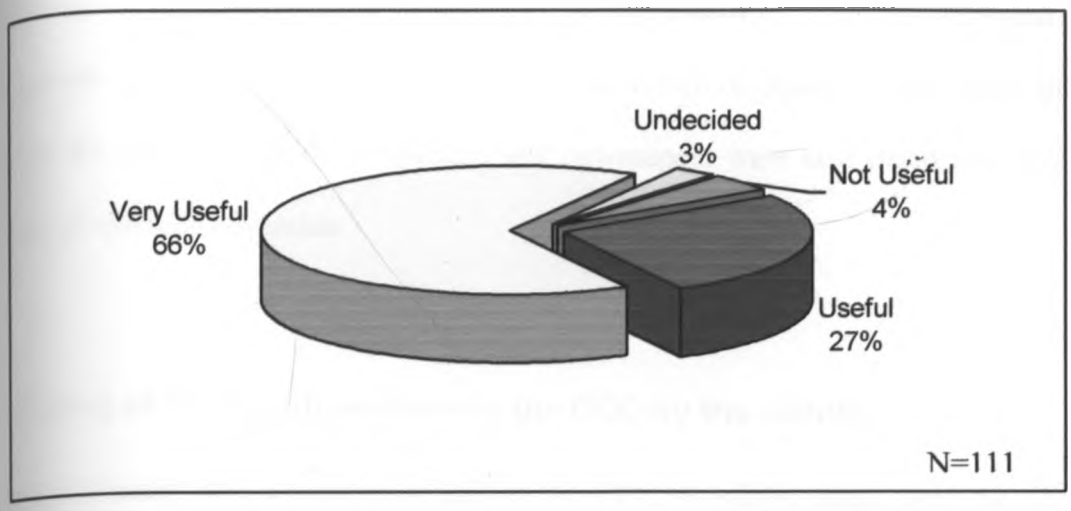


Figure 14: Perception by clients on the Nutrition Education offered in the CCC

Analysis of variance was used to test the hypothesis that knowledge about roles of food by PWHA leads to positive perceptions of the nutrition education. ANOVA between perceptions of those who felt that the nutrition education offered in the CCC was very useful and the knowledge that HIV/AIDS increases the body nutritional requirements showed a significant association $p< 0.01$($p=0.001$). Similar analysis (ANOVA) between those who perceived the nutrition education as very useful and knowledge that increased nutrient intake would help PWHA counter infections was also significant $p<0.01$ ($p=0.001$).

4.6 Sources of diet information

Clients were asked to recall if they had ever received nutrition education from other sources other than the CCC. It emerged that some had received nutrition education as in patients in hospitals while admitted suffering from HIV/AIDS complications. The hospitals named were Kenyatta National Referral Hospital, Mbagathi District Hospital, AIC Kijabe Hospital, Machakos General Hospital, Nairobi West Hospital and "Lea Toto"

a charitable organisation based in Riruta Division). Pumwani Maternity Hospital was also named as a source by those clients who had delivered their babies there. Mass media such as the radio, television, magazines and newspapers were also listed as important sources of nutrition education.

4.7 Rating of the health workers in the CCC by the clients

Clients interacted with a number of staff in the CCC. Available staffs were the clinical officers, nurses and pharmacists. The nutrition educators were available in the health facilities where the CCC were based, but they were not specifically assigned to the CCC. They served as the health centre nutrition educators and would be called to attend to the clients during the CCC clinic days. Figure 15 shows that most of the clients from the three CCC sites rated their health professionals as concerned with their welfare.

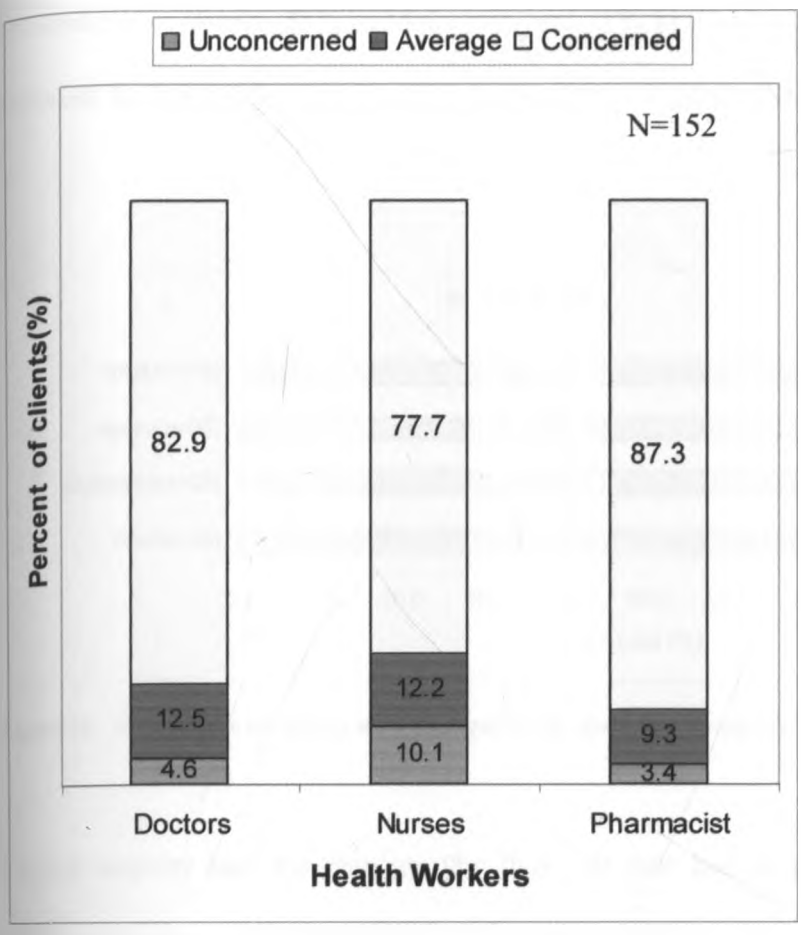


Figure 15: Rating of health workers at the CCC by the clients

4.8 Knowledge testing

One of the study objectives was to assess the knowledge PWHA had about the role of food in relation to their condition.

4.8.1 Respondents' diet

The clients were asked if they had changed their diets since they were diagnosed with the HIV/AIDS virus. The results in the Figure 16 indicate that for more than 70% of the clients from the three target sites, their diets had changed. Seventy-four percent of the

respondents in Riruta, 88% in Makadara, and 71% in Rhodes/Ngaira said their diets were different from what they were eating before they established their HIV status.

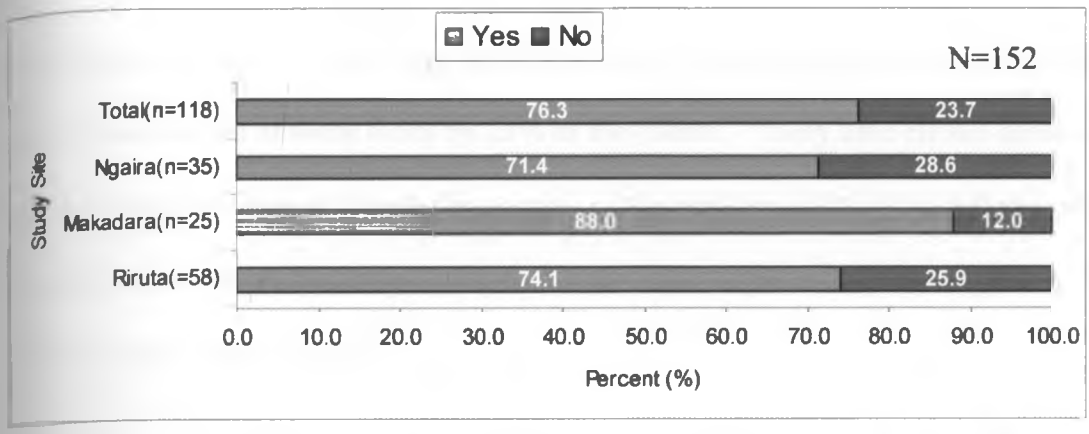


Figure16: Percentage of clients who changed their diet after being infected with HIVAIDS virus

Further enquiry into the reasons why they felt they had to change their diet elicited a variety of responses. Among the most frequent responses were the following;

1. Twenty percent (20%) of the clients felt that since they had acquired additional nutrition knowledge from the education sessions in the CCC (irrespective of who had issued the information) they felt they had to make adjustments to their diets.
2. Ten percent (10%) also expressed the need to improve their health status in order to combat the disease.
3. Eight percent (8%) indicated that a change in diet was necessary to assist the medication being taken to be more effective in the bodies.

Some of the commonly listed foods which the clients indicated as most important to their disease condition were; milk (94%),fish(90%),traditional green vegetables(78%),

chicken (70%), fruits (60%), meat (55%), ugali (50%), eggs (40%)beans (32%), fresh raw vegetables (30%), ripe bananas(33%), and rice (24%),. Questioned on if there were some foods they were required to eat but they did not eat, 63% (n=113) said no while 37% said yes as represented in Figure 17. Among the reasons the clients listed for not consuming the foods they were required to eat were the food costs by 40% of the clients and personal dislike of some foods by 25% of the clients. Thirty nine clients declined to respond despite assurance from the researcher of the confidentiality of the information recorded. Some clients said responding to this question might affect their eligibility to supplementary foods in future.

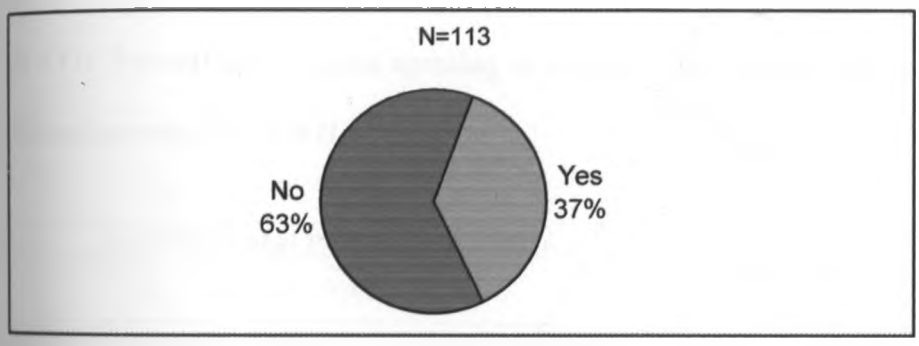


Figure 17: Percentage of Clients who felt they required to eat special foods.

4.8.2 Knowledge of key nutritional practices for PWHA

As presented on Table 4.11, over 85% of the clients were knowledgeable on ten out of the twelve key nutritional practices for PWHA. All the clients 100% knew that they needed to wash their hands before food preparation. Only 17.1% of the clients felt the need to consume different foods from the rest of the people in their households and 40% felt they needed to avoid crowded places. Chi square analysis indicated no significant

associations between the age of client's and those clients who held the opinion that they had to consume different food from others in the household, $p>0.05$ ($p=0.532$). Correlation analysis did not reveal any significant relationship between the clients age and those holding the opinion that they had to consume different foods, $p>0.05$ ($p=0.337$). Chi square analysis did reveal significant associations between those clients who felt they should avoid crowded places and their age, $p<0.05$ ($p=0.038$). Correlation analysis also revealed a significant relationship, $P<0.05$ ($p=0.038$). Chi square analysis between BMI and knowledge by PWHA that, HIV/AIDS increases the body's nutritional requirements and Increased nutrient intake will help counter infections did not reveal any significant associations, $p>0.05$.

Table 4.11: Percentages of those agreeing or not agreeing with the statements on key nutritional practices by PWHA.

	Key Nutritional Practices for PWHA	N=152 Percent% Agreeing	N=152 Percent (%) Not agreeing
A	HIV/AIDS increases the body's nutritional requirements	76.3	23.7
B	Increased nutrient intake will help counter infections	76.3	23.7
C	Increased energy consumption will improve energy levels	89.5	10.5
D	**PLWHA have to consume different foods from those in their households**	**17.1**	**82.9**
E	Every time I visit the CCC my weight should be measured	99.3	0.7
F	My drinking water should always be treated (boiled), sterilized	86.8	13.2
G	Foods eaten by PWHA are the same as that of other household members.	87.5	12.5
H	Physical activity is important for PWHA	96.1	3.9
I	I should eat smaller meal portions frequently	86.8	13.2
J	I should drink at least eight glasses of water daily	91.4	8.6
K	I should wash hands before food preparation	100.0	0
L	**I should avoid crowded places**	**40.8**	**59.2**

Since physical exercise is a major health prerequisite for PWHA. Clients were asked to list the physical activities they normally engaged in. The most frequent physical activities undertaken were walking (82%), jogging (35%), and simple aerobics (15%), running and swimming (3%) of the clients.

4.8.3 Individual food dietary diversity

The Individual Food Dietary Diversity Questionnaire (IFDD) formulated by FAO (Appendix 2), was applied on clients to assess their food intake variations. According to World Food Programme (FAO, 2007) IFDD can be used as a proxy indicator for nutrient adequacy as it shows consistent association with dietary adequacy and caloric intake. The twenty hour food recall period was used, based on the FAO recommendations that it has minimal recall error and that it is also less cumbersome to the respondents (FAO, 2007). As portrayed in Table 4.12 the minimum score for the IFDD was 3, the mode score was 6 and the maximum score was 11 out of a maximum score of 16. The mean score was 6.4 (S.D of 1.697). The most frequently consumed foods were the cereals (100%) and vitamin A rich vegetables and tubers (85%). The least consumed foods were milk and milk products (21.7%), sweets (26.3%) and oils and fats (31.6%). Most clients(79.6%) indicated they ate meals or snacks outside the home. Dark green leafy vegetables had been consumed by 30.3% of the clients

Table 4.12: The Clients' Individual Food Dietary Diversity Scores

Dietary Diversity scores. Total score (16)	Frequency of clients N=152	Percent%
3	6	3.9
4	12	7.9
5	29	19.1
6	35	23.0
7	31	20.4
8	22	14.5
9	10	6.6
10	6	3.9
11	1	0.7

Table 4.13 shows consumption of foods was generally less diversified since most of the clients had IFDD scores of less than 50% in all the target sites. Seventy seven percent (77%), 76.7% and 68.8% of the clients in Riruta, Makadara and Rhodes/Ngaira CCC respectively scored less than 50%.

Table 4.13: Individual Food Dietary Diversity scores by target sites

	IFDD scores (%)		N=152
Target Site	Scored Less than 50%	Scored More than 50%	Total %
Riruta	77.0	23.0	100
Makadara	76.7	23.3	100
Rhodes/Ngaira	68.8	31.2	100

Bivariate analysis was used to test the hypothesis that there was no association between BMI and diversity in dietary practices by PWHA. Pearson correlation showed a significant relationship, BMI and IFDD were negatively correlated $P<0.05$ ($P= -0.016$).

4.9. Qualitative data analysis

4.9.1 Reponses from the nutrition education staff in the CCC

Five nutrition educators, four females and one male were interviewed. All were working within the CCC selected for the study. They all confirmed that they had been trained specifically as nutritionists before their deployment to the health centres where the CCC were based. They were charged with the responsibility of providing nutrition education to both the clients attending the CCC in addition to those in the other areas of the health centres. Data showed they had worked as nutrition educators for periods ranging from one to nineteen years and all had attended additional professional trainings in Nutrition and HIV/AIDS within the last three years. None had attended any of the trainings offered specifically by NASCOP on provision of nutrition education to clients in the CCC. One of them had undertaken an additional course in communications strategy. Although they all expressed satisfaction with their work as nutrition educators in the health centres, only one expressed satisfaction in working with the CCC clients. All of them expressed their fears of contracting some of the opportunistic diseases presented by their patients. Questioned as to what they disliked most about their work they raised the responses outlined in Table 4.14.

Table 4.14: What the nutrition educators disliked most about their work in the CCC

What nutrition educators disliked about their work	N=5
1. Lack of enough tools to do their work 2. Lack of an adequate environment within which to carry out their work 3. The fact that clients attending public CCC were mostly economically disadvantaged hence the chance of implementing aspects of nutrition education with financial implications, were limited. 4. Lack of assistants in the health facilities as the work-load was too heavy.	

4.9.2 Provision of nutrition education in the CCC

The nutrition educators were asked the period they gave nutrition education to their clients. Two indicated that they gave this education to their clients immediately after diagnosis, that is, during the client's first visit to the CCC. Three indicated they did this during a client's subsequent visit to the CCC. They all agreed that nutrition education should be provided as often as possible to clients.

The researcher wanted to know how the nutrition educators managed to talk to the large number of clients who turned up for their CCC appointments. Only one nutrition educator in Riruta CCC was able to talk to all the clients in Riruta CCC seeking nutrition education services, and this was conducted by talking to all the clients collectively when they turned up in the CCC waiting areas before being individually attended to. The other educators were in agreement that they were not able to talk to all their clients. Suggestions derived from enquiries on how they thought nutrition education could be provided to all their clients yielded the strategies presented in Table 4.15.

Table 4.15: Proposed Strategies for expanded nutrition education coverage of CCC clients

Proposed strategies	N=5
1. Clients being given other appointment times, apart from those during the CCC clinic day.	
2. Client's to be issued with supplementary handouts based on nutrition.	
3. Having more nutritionists posted to help out in the CCC	
4. Education to be conducted in group sessions instead of "one on one".	

Further probing to obtain information on why they were unable to talk to all the clients who turned up for their clinic appointments led to the responses that are displayed in Table 4.16.

Table 4.16: Reasons for not being able to provide nutrition education to all the clients' turning up at the CCC

Reasons	N=5
1. Nutrition educators had to attend to other duties in the Health Centres hosting the CCC eg MCH, diabetic clinic counselling 2. Individual nutrition education sessions took a long time and it was impossible to attend to all the clients.	

All the five nutrition educators agreed that nutrition education should be offered frequently and continuously to all CCC clients. More than half of them also agreed that those who lived with the clients, that is, those affected by HIV/AIDS should be eligible for nutrition education but wondered how this could be achieved without compromising the client's right to confidentiality.

Perception of the nutrition education by clients was viewed as good by the nutrition educators. The educators also felt that their clients were aware of importance of diets to their condition and that their clients endeavoured to put into practice what they had learnt.

4.9.2 Perception of information offered during nutrition education sessions

The nutrition educators were asked if they felt that the information they offered during the nutrition education sessions was sufficient. Citing the reasons listed in Table 4.17, all the educators agreed it was insufficient.

Table 4.17: Reasons why Information offered during nutrition education sessions was seen as insufficient.

Reasons why information was sufficient	N=5
1. It is important for food demonstrations to be done, but food models were not available in the CCC. 2. Time available was not enough to discuss all the important nutrition related issues the clients needed information in. 3. There was lack of printed materials and general teaching aids, necessary to supplement successful nutrition education.	

4.9.3 Sources of Nutrition education materials

In Table 4.18, are the various sources of nutrition education materials listed by the nutrition educators. They indicated that they obtained materials from MOH but also used their own sources to acquire more materials. Three of the educators stated that they sourced other materials from NGO involved in HIV/AIDS. Only one educator had looked for nutrition education materials from the internet. They all agreed the materials they were using from the various listed sources were easy to understand but were inadequate for the nutrition education sessions in the CCC.

Table 4.18: Sources of materials for the nutrition education sessions

Source of material	Number of educators N=5
Ministry of Health	5
Non-Governmental organisations	3
Self resources	5
Internet	1

The nutrition educators were asked to rate the usefulness of the recommended nutrition education they used on a scale of one to five. These materials had been developed by NASCOP to be used during the nutrition education sessions. The results are presented in Table 4.19. The nutrition counselling cards which were available in all the selected CCC were rated as very useful by three educators and useful by two of the educators. Only one CCC had both the information charts on food drug interactions and food and nutrition problems for PWHA, and they were rated as averagely useful. The nutrition guidelines were not available in any of the clinics though two educators said they had their own copies.

Table 4.19; Rating of the recomended IEC materials by nutrition educators.

Material description	Very Useful (5)	Useful (4)	Averagely Useful (3)	Not Useful (2)	Unnecessary (1)
Nutritional counselling cards for PWHA	***	**			
Information sheets on food-drug interactions			*		
Information sheet on food and nutrition problems for PWHA			*		
Kenyan Nutrition guidelines for PWHA		**			
N=5					

*Indicates an individual educators rating

None of the educators could recall how nutrition education for PWHA was conducted before the advent of CCC in the year 2005. Data also showed that none of the educators had any problems talking to their elderly clients.

4.10 Observation of the nutrition education session

Three observation sessions were conducted in which two male and one female client were observed. The sessions were facilitated in both English and Kiswahili languages. Table 4.20 lists the recommended actions of the GATHER process and the number of nutrition educators carrying out the actions. The educators were expected to perform eighteen actions during the sessions but half of them were not attempted. The nutrition educators greeted their clients warmly but not by name and they treated them respectfully. Though they had the client's records in front of them during the sessions they did not share the results of the clients' nutritional assessment. The educators did not enquire from the clients their nutritional needs and consequently they did not involve the clients in setting nutritional goals and helping them make informed nutritional choices. Clients were not assured of confidentiality of the information being given and a return visit was not discussed. Most of the recommended steps were not performed by the three the nutrition educators. Sessions would have been classified as successful if all the recommended actions were performed.

Table 4.20: **Summary of service provider actions during nutrition education sessions**

	Actions by the nutrition educators	Performed actions	Did not perform action
A	Greet client warmly.	***	-
B	Greet client by name.		***
C	Ask about their well being.	*	**
D	Ask about their food intake and problems encountered.		***
E	Carry out nutritional assessment on client using BMI.	*	**
F	Share results from the client's biochemical and clinical analysis with the client.		***
G	Identify client nutritional needs.		***
H	Explain alternative choices to address client nutritional needs.	*	**
I	Help client set nutritional goals.		***
J	Help clients make informed choices to attain nutritional goals.		***
K	Explain clearly to their client the nutritional implication of the choices made.	*	**
L	Treat client with respect.	***	
M	Ask open ended questions.		***
N	Encourage client to ask questions.	*	**
O	Use nutritional education materials during the session.	*	**
P	Use clients' records.	***	
Q	Assure client of confidentiality.		***
R	Discuss a return visit.		***
	N=3		

*** Represents a nutrition educator carrying out the outlined tasks during the observation of sessions.**
N represents the number of sessions.

4.11 Reactions to the nutrition education sessions

Two FGD were conducted to study reactions to the nutrition education session and the materials used. In the discussions the clients concurred that on their initial visits to the CCC they received nutritional information on the need to improve their diets to manage their disease condition. This information was provided to them by either the nutrition

educators or nurses or clinicians depending on who attended to them first. In some CCC nutrition education was provided continuously during their first three consecutive clinic appointments. Clients who had undergone these three education sessions pointed out that there was no need to attend further sessions as they felt that no new information would be forthcoming.

During the follow up visits in the CCC, clients said the emphasis on the information they received was mainly on drug adherence and lifestyle practices from other CCC staff and not nutrition education. The nutrition education sessions were conducted on the basis of "one on one", that meant, whoever was providing the nutrition education gave nutrition information to each client individually. Some clients recalled that group nutrition education sessions had been held at the reception/waiting rooms as clients waited to be attended to during the designated CCC appointment dates. From the discussions it was evident that the information they received during this general education session was beneficial to them. From these general sessions they had learnt the importance of planning their meals to ensure they were balanced and nutritious.

The nutrition educators described how they had drawn clients' attention to foods considered as nutritionally superior and explained the importance of having a varied food intake to the clients. The clients also said that the foods they had been advised to consume were easily available and were based on their daily diets but there was a general feeling that they were not always affordable. Some of the specifically mentioned foods considered expensive were, cooking oils, fish, meat, fresh fruits and vegetables. Some of the clients pointed out that in the CCC they had been advised in the following manner

"uhakikishe umekula vizuri" translated to mean "make sure you eat well!". This message was rather vague to the clients. Further probing on clients understanding of this phrase raised the following interesting translations.

- For some it meant they should eat until they felt satiety.
- For others it meant that they eat more meat and chicken as these food types were considered nutritionally superior.
- To some it meant that they should only eat traditional foods.
- To some clients they understood that the message meant they should ensure that at meal times, they should eat until they feel satiated.

Discussions on availability of the nutrition educators in the CCC resulted in a general consensus among the clients that the educators were specifically not available in the CCC since there was no particular station or consultation room where they could be found. The clients felt that the educators inaccessibility could be attributed to the fact that there were so many clients to be attended to during the clinic day and with the new clients being given priority by the educators, and the other regular clients in the CCC could not have easy access to them.

Though the nutrition educators were generally seen as friendly and helpful there was a general feeling that they did not take their jobs seriously, because it was not easy to trace them in the CCC. Clients also expressed the sentiments that the educators were not really committed to their work because nutrition education did not seem to get the same emphasis compared to the other services provided in the CCC. They felt that some of those who were providing nutrition education to them were not very sure about the authenticity of the information they were providing.

During the FGD the nutrition educators expressed the opinion that they had to attend to all the other departments at the health centre leaving them with limited time to attend to the CCC clients.

4.11.1 Reactions to the recommended nutrition education materials.

The recommended nutrition education materials (Appendix 8) were displayed in the rooms where the FGD took place. Participants were left to look and study them for thirty minutes before the onset of the FGD session. It emerged that not all those present had seen the Nutrition Counselling Cards for PWHA. Clients commented that nutrition information had been disseminated to them basically through oral presentation and no visual or printed materials had been used to supplement the information. Apart from the Counselling Cards for PWHA the other materials like the charts and brochures were being seen for the first time by those present.

4.11.2. Counselling cards for PWHA

The pictures used in the cards were accurately described by the FGD participants who agreed they were conveyed the message accurately. They were described as attractive, appealing, and educative. The simplicity of the drawings and pictures were highly appreciated. The print on the cards was easily legible and was well formatted. The clients concurred that pictures on the card reflected the local situation as they could identify the foods, equipment and the people displayed in the drawings. The participants agreed they reflected the reality of the Kenyan situation for PWHA

4.11.3 Chart with information on food drug reaction

All participants concurred that this was the most useful of all the nutrition education materials present with the only disadvantage being that it was in English resulting in non comprehension by those not conversant with the language. It was expressed that a Kiswahili translation should be made available to enable comprehension by those who could not read or understand the English language.

4.11.4 Chart outlining measures to be undertaken to deal with general food and nutrition problems faced by PWHA

Participants agreed the chart was useful it was similarly expressed that the information should be translated to Kiswahili to cater for those who do not understand English.

4.11.5 Brochures with nutrition education information

All the participants were in agreement that had never seen these brochures in the CCC. The brochures were deemed as important by those present due to the nutrition information and messages they contained.

4.11.6 Stigma to PWHA

From the FGD sessions clients said their families were very understanding of their condition but other acquaintances, those outside the family like friends and colleagues at the workplace still found it challenging dealing with them. They expressed the opinion that if they were open about their status they normally felt acceptance by others. Some of

the clients expressed interesting sentiments in that they could not tell their employers that they had an appointment to visit the CCC because it was like announcing their sero status. They were worried they could loose their jobs if their employers were aware of their status. Those expressing this sentiment felt they could only get permission to be away from the work places for a few hours by feigning other pressing errands, in order to rush to the CCC for medical attention. Since they had limited time to spend in CCC, the nutrition education component was largely ignored because the most critical activities to these clients was to replenish their drugs and have their weight monitored.

It was clearly apparent that most clients preferred to attend CCC far away from their residential areas. The reason generally advanced was that they did not want other people from their residential areas to know they attended CCC. Concern was also raised that CCC staff were careless with their talk and therefore could not be trusted to keep clients information confidential. A specific case was reported of a client coming all the way from Voi in the Coastal Province to be attended to in a CCC in Nairobi in order for other people from her locality not to be aware of her condition.

4.11.7 New Study Findings

It was observed that the nutrition education component of the CCC was not effectively being implemented. During the observation of the nutrition education sessions it was noted that seven out of the eighteen recommended actions to be performed were related to nutrition and only two out of the seven nutrition actions were acted upon by one nutrition educator in one of the observed sessions. It appeared that the nutrition educators had limited information on the importance of nutrition to their clients' wellbeing.

It was noted that when a CCC appeared vibrant with activities clients were more inclined to turn up for services. Riruta CCC was a vibrant clinic and it recorded the highest average number of visits by clients. It was assisted by an NGO named "Liverpool VCT" who provide extra professional personnel to assist at the CCC. Since food supplements were also being issued at the CCC, it was very probable that the clients honoured their clinic appointments regularly to be eligible to receive the foods supplements. During these visits there was a high likelihood that clients would be exposed to nutrition education. The Riruta CCC also had a relatively higher BMI compared to the other two sites. The increased visits could also have been attributed to the feeling by clients that they would receive better services because of the NGO presence. This result is consistent with MEP(2001) which points out that client satisfaction with the quality of services makes them more likely to continue coming back to a clinic for follow up services. With better service provision the number of clients attending the CCC would rise and with adequate planning nutrition information could be disseminated to PWHA leading to improved nutritional status.

Clinic appointments at the CCC were from 9.00 AM to 12.00 Noon. Clients who were in salaried employment appeared uncomfortable with the times as they were in a rush during their appointments because of limited time at their disposal. It is apparent that if the clinics were open for longer hours, maybe from 7.00 AM up to 6.00PM clients would be more relaxed and willing to wait for their nutritional education sessions.

Ojofeitimi (1998) study showed that overweight PWHA lost weight when they were enrolled in nutrition counselling sessions coupled with food preparation demonstrations as soon as they had been confirmed as HIV positive. All PWHA need nutritional advice as early as possible because of the corresponding need to make urgent adjustments to their nutrient intake to improve their health status. With the study results revealing that only 21% of the clients had specifically talked to a nutrition educator in the CCC there is an urgent need to correct the situation. Results also illuminated the fact that many PWHA had not received nutrition education from qualified nutrition educators. Nutrition information was shared by clients during support group meetings and was at times given by doctors, nurses, VCT counsellors and other non nutrition specialists in the CCC, depending on who the clients saw first on their preliminary visits to the CCC. Lack of access by PWHA to trained nutrition educators could result in PWHA lacking sound nutritional knowledge in management of HIV/AIDS. Rachier et al (2004) outlines the importance of having professionally trained counsellors if counselling results were to be effective. It therefore is not surprising that the some clients had complained that the nutritional advice they had generally received in the CCC, was not clear. Nutrition messages given to clients needed to be explicit to avoid confusion and inappropriate nutrition practices.

In the CCC it was observed that the nurses were employees of Nairobi City Council and the nutritionists, clinical officers and medical officers of health were Ministry Of Health employees. Also present in the CCC were various volunteers, some from various NGO's dealing with HIV/AIDS like Women Fighting AIDS in Kenya (WOFAK) and others

from KEMRI and Medicens Sans Frontiers (MSF). There appeared to be very poor coordination among these different players in the CCC especially in relation to nutrition education and other lifestyle information given to the clients. There was a danger of incorrect nutritional messages being passed to PWHA because the training these volunteers had gone through could not be ascertained. Since the CCC fall directly under NASCOP there is need for more stringent monitoring of those offering services to avoid misinformation.

CHAPTER FIVE

DISCUSSIONS

As portrayed in Figure 2, the CCC denotes a complete package of care for HIV infected people. This investigation focussed on nutrition education for PWHA in the CCC. The study emphasis was on exposure to the nutrition education sessions for PWHA, awareness by clients of nutrition knowledge for HIV/AIDS and availability of the recommended nutrition education support materials in addition to utilisation of the Kenyan Nutrition guidelines on HIV/AIDS during the education sessions. Data was also generated on the nutritional status of PWHA and their socio-demographic characteristics.

The study findings revealed a marked absence and non use of the recommended nutrition education supplementary materials in the CCC. Though these materials were lacking, both the nutrition educators and clients were in agreement that these materials were useful in supplementing nutrition education. The research question posed earlier, "Are the education materials perceived as useful in supporting the nutrition education session by both the nutrition educators and PWHA?" was answered positively. Clients expressed concern on availability of the materials in English only. They felt that Kiswahili translations should be made available in order for the materials to be useful and informative to those conversant with just one of the languages. From observation of the nutrition education sessions it was evident that the recommended GATHER process outlined in the Kenya nutritional guidelines was not being adhered to by the nutrition educators.

It was evident that many of the clients had not been exposed to nutrition education sessions in the CCC, therefore the research question "Is exposure to nutrition education at the CCC reflected in the dietary practices of PWHA" could not be adequately answered. The results also revealed that clients were knowledgeable about the key nutritional practices for PWHA. There was a significant association between positive perceptions of the nutrition education sessions and knowledge that HIV/AIDS increases the body nutritional requirements. The hypothesis that "Knowledge about role of foods by PWHA, leads to positive perceptions of nutrition education by PWHA" was therefore not rejected.

From the findings it was evident that there were no significant relationships between nutritional status of PWHA and their socio-demographic characteristics. The hypothesis that, "There is no significant difference in the nutritional status of PWHA according to their socio-demographic characteristics" was therefore not rejected either. A significant association however was found between the nutritional status of PWHA and the study sites.

The findings also showed a significant negative correlation between the nutrition status of PWHA and the IFDD scores. The hypothesis that, "There is no association between nutritional status and diversity in the dietary practices by PWHA" was rejected.

The study sought to answer the research question "What is the perception of the nutrition education session in the CCC by both PWHA and nutrition educators?" Based on the

results it was appropriate to conclude that majority of the clients and all the nutrition educators felt the sessions were useful and therefore crucial to their wellbeing of the clients although most of the clients had not been exposed to them. Clients took the initiative to look for additional nutritional information from other media sources to improve on their nutritional knowledge.

5.1 The recommended nutrition education materials.

Thuita (2005) noted the evident scarcity of materials and gaps in the nutrition information delivered to PWHA. From this study it is evident that the scarcity still persists. This study exposed lack of the recommended support materials developed by NASCOP for use in the CCC. The study results showed that some materials had been used for education sessions of only 9.9% of the clients. Interestingly all these materials were available at the NASCOP distribution office at the time of the study though they were not available in the selected CCC. They were also present in one of the DASCO distribution stores. There appeared to be a snag in the materials distribution process. These materials are important in enhancing the delivery of the nutrition education content and could also act as a constant reminder of nutrition messages if displayed at appropriate areas in the CCC. Availability of the recommended materials would assist PWHA in retention of nutritional information acquired. To deal with this drawback, it is necessary for NASCOP to develop an elaborate monitoring system for the material distribution process to ensure that these materials reach the CCC and to also ensure that nutrition educators also have access to them.

5.2 Utilisation of the Kenyan nutrition guidelines

Only two nutrition educators claimed to have a copy of "The Kenyan Nutritional guidelines for PWHA", the 2007 edition, and this was not verified because they did not have the copies present at the time of the study. It was evident that the GATHER process, outlined in the Kenya nutritional guidelines was not being adhered to by the nutrition educators during the nutrition education sessions. Lack of access to these crucial guidelines by the nutrition educators implied that maybe they were not aware of this recommended education process for their clients. This could have influenced the lack of adherence to the process during the education sessions. The GATHER process is client centred and it should lead to client satisfaction during the nutrition education sessions leading to better acceptance of the nutrition education by the clients. Rachier et al (2004) illustrates how client satisfaction is in direct proportion to the extent they feel they are able to set the agenda during the counselling sessions. Use of the GATHER process during nutrition education sessions could lead to the education sessions being viewed as very valuable by the clients. Through the process the nutrition educators listen to their clients attentively and then base the nutrition education from the information derived from their clients. This could help the client in setting realistic nutritional goals and could increase the likelihood that clients would ensure that they consult the nutrition educator every time they come for their clinical appointments at the CCC.

5.3 Usefulness of the recommended education materials and their adaptation to the local situation

From the results it was evident that both the nutrition educators and PWHA found the nutrition counselling cards simply illustrated and clear in their message. The high rating of the cards by the educators implied the message on them was clear and easy for their clients to understand. This is not surprising as a study before by Msimuko (1988), explains that difficulty in understanding nutrition education support materials results if the words, idioms and graphics used are not familiar to the audience. From the FGD it was evident that the pictures contained in the cards had been adapted to the local situation because the clients could easily identify the pictures of people and foods on them. This made the information realistic and easy to apply by the clients. The information sheets especially the ones on drug diet interactions were seen as the most useful nutrition education material. They contained explicit information outlining how consumption of certain foods could directly affect drug efficacy. The brochures developed by NASCOP were also seen as containing useful nutrition information. This appears to further demonstrate the need by PWHA to have more information on their disease condition. Because Nairobi is a cosmopolitan city there is need to have these education materials in both English and Kiswahili. NASCOP could also be advised to have these produced in the other Kenyan vernacular languages to cater for those who might not be at ease with the two languages.

5.4 The nutrition education sessions

The nutrition education sessions were more likely to take place when the clients came to the CCC for services. The more frequently PWHA visited the CCC the more the chances they had to be exposed to these sessions. The study showed that 66% of the clients perceived nutrition education as very useful component to their well being. PWHA expressed their opinion that nutrition education involved a lot of time, and they felt they felt that they had limited time. According to Kennner, et al (1999) and Underbakke et al (2006), limited time is a barrier to successful nutrition education. Since some clients were worried they could loose their jobs if their employer was aware of their status they tended to be in a hurry during their appointments at the CCC. For these clients waiting to attend a nutrition education session was not viable as it meant waiting for a long time to see the educator due to the big number of clients at the CCC. For them nutrition education was not a priority compared to the other services offered in the CCC. If clients are made to understand the importance of the nutrition education sessions they are likely to become committed to attending them. Adequate attention needs to be given on how to raise awareness among the clients in the CCC on the need to seek for nutrition education every time they turn up for their appointments. PWHA need to be encouraged to be open about their sero status especially to their employers so that they can request for adequate time to attend clinics without resorting to brief inadequate attendances. Although corresponding laws to ensure that PWHA are not victimised by their employers are in place in Kenya, they do not appear to be adequately enforced compounding this fear of job loss. The clients were also not uncomfortable being talked to by either younger or older nutrition educators in relation to the clients' age.

The nutrition educators had expressed that they lacked adequate time to attend to the education sessions for their CCC clients due to their heavy workloads in the other sections of the health centres, where their services were also required. This is similar to Muhomah (2008) findings which show the difficulty nutrition educators face in giving personalised attention to their clients due to heavy workloads. During the CCC clinic days the other sections of the health centres were still operational. It was too taxing for one nutrition educator to attend to all clients in the different sections of the health centre showing the need for more nutrition educators to be posted in the CCC.

5.5 Nutritional knowledge

Piwoz (2004) and Daelmans(2005) and Fawzi, Msamanga and Spielgman (2004) have shown importance of dietary adjustments to enhance the survival chances of HIV infected individuals. This study revealed that clients had made an effort to modify their eating habits by changing their dietary patterns after knowing about their disease condition. Most clients said they had made an effort to modify their diets indicating high levels of knowledge about their disease condition. The results also indicated that most patients were knowledgeable on the key nutrition practices for PWHA despite the fact that they had not discussed their nutritional issues with a nutrition educator in CCC education sessions. This is probably because the clients implicitly understood the need to improve their health in order to combat their disease condition. It was evident that clients lacked sufficient information as shown by those clients who felt they had to consume different food from those consumed by members of the household.

nformation on HIV/AIDS is dynamic and for those charged with responsibility of giving tients nutrition education, they need to make sure the information they give is relevant nd up to date. There was a marked lack of access to internet facilities by the educators nplying that current information and new nutritional management techniques may not e available to both educators and their clients. Despite this shortcoming it was noted that ients aggressively sought out more information from magazines and newspapers. They lso paid keen attention to programs aired on the local radio and television stations on IV/AIDS. This implied they were curious about their disease condition and thus tively searched for any information related to HIV/AIDS. This study has shown that ore knowledge about roles of food has been shown to lead to positive perceptions of rition education.

6 Dietary diversity and nutritional status

tary diversity has been suggested as a proxy indicator for nutrient adequacy (WFP, 07). It shows consistent association with dietary adequacy and caloric intake. Results n the IFDD questionnaire showed that most clients were not very diversified. Lack of rsity could have been affected by clients purchasing powers for food as many were sified as belonging to the low income bracket with earnings of less the KES 10 000 month (CBS,2005).

itional status of PWHA was reflected by BMI measurements. Riruta CCC had the t prevalence of underweight clients which was attributed to the noted issuance of lementary foods to client whose BMI scores showed they were severely

malnourished. BMI was negatively correlated with the IFDD scores. The implications were that a low IFDD score was associated with increase in BMI, implying that those without diversified food intake were more likely to be overweight. Because most of the clients fell within the low income bracket there was a likely probability that they did not have access to a diversity of foods leading to more consumption of carbohydrate foods which are relatively cheaper compared to other foods. Excess sugar from carbohydrates is stored as body fat which could have led high BMI for those without diversified food intake.

Clients portrayed their interest in management of their condition through search of nutritional related information. If clearer factual information is made available to PWHA on the need to diversify their diets it is implied that clients would strive to put it into practice. This was further demonstrated by the study results showing that knowledge of key nutritional practices by PWHA was strongly associated with positive perception of nutrition education.

5.7 Demographic and socio-economic factors

MOH (2001) report states that in Kenya the AIDS epidemic affects the productive groups and especially those at the peak of their life. Similar results have been reported by Warentho (2005). The results of this study showed that the distribution of HIV infection among the adult clients cut across all the adult age groups but with a higher concentration among those aged 26 to 42 years. Studies by NACC (2005) and MOH (2007) have shown that for every infected man there are two infected women. It was therefore not surprising

that the study results showed that more women than men turned up for their clinical appointments in the CCC. From the results it was apparent that a very high proportion of women in the age category between 18 to 42 years were coming to the CCC for their clinic appointments implying that women in this category were either more vulnerable to the virus infection or they took their disease condition seriously. This suggests an urgent need to institute viable programs to educate women in this group on various ways to prevent and reduce virus infections in order to reverse the trend.

Kenya is one of the African countries with very high literacy rates (NACC, 2005). Results showed that most of the clients had at least, primary level of schooling. Since education has been identified as one of the priority areas in combating HIV/AIDS it is hoped that majority of the clients attending the CCC have no difficulty in understanding nutrition education and reading the nutrition education support materials. If these materials are to be made available to clients there is a high possibility that they would read them and maybe make an even greater effort to ensure the nutrition aspect of their disease condition is adequately managed.

Half of the clients fell in the low income earner bracket, which was less than KES6000 per month. Compounded with the fact that they lived in the city, there source of food could have been mainly through purchasing. This was expected to affect their food acquisition capabilities and ability to diversify their diets leading to compromised health status. Warentho (2005) explains that low incomes cannot adequately meet the increased demand of HIV/AIDS disease among the infected persons. On the contrary, the BMI

results indicated that most of the clients had BMI>18.5kg/m^2, implying that despite their low incomes the clients had access to food but IFDD showed that the food which they could access was not diversified. The results showing that some target sites were associated with a higher or lower BMI, could be attributed to the fact that there was evident food aid distribution at Riruta CCC for those with low BMI, which could have led to improved nutritional status among the clients at that particular CCC.

CHAPTER SIX

CONCLUSIONS AND RECOMENDATIONS

6.1 Conclusions

This study focussed on nutrition education offered to PWHA in the CCC. The following are the different conclusions drawn from the study.

1. The client's nutritional status was not dependent on their dietary diversity practices.
2. Most of the recommended information, education and communication materials developed by NASCOP to aid nutrition education in the CCC are not available..
3. The messages directed to PWHA contained in the Counselling Cards for PWHA are adapted to the local and are clear and easy to understand.
4. The nutrition educators are unable to conduct successful nutrition education sessions because they lack the Kenyan National Guidelines on Nutrition and HIV/AIDS.
5. Demographic and socio-economic factors do not influence the nutritional status of PWHA.
6. The clients coming to the CCC are not convinced of the importance of attending these sessions.
7. Despite lack of access to nutrition education PWHA are knowledgeable about the role of food in relation to their condition.
8. PWHA are aware of the key nutritional practices

9. Nutrition educators need additional training on how to conduct nutrition education sessions.
10. The study findings will provide useful data to MOH and NASCOP under whose auspices the CCC fall to assist them to address issues which will improve issuance of nutrition education to clients in the CCC.

2 Recommendations

he study revealed that nutrition education in the public CCC in Nairobi is not going on outlined in the Kenyan nutritional guidelines for PWHA. The CCC have been nctional from the year 2005 (NACC, 2005). The nutrition component of the CCC tlined nutrition education to PWHA as an area to be given priority. Two years later it evident that the nutrition education component has still not been effectively corporated. The nutrition education sessions rarely take place and most of the commended nutrition education support materials are not available in the CCC. This ggests that the nutrition education services offered to PWHA in the public CCC are dequate. Based on the findings of this study the following recommendations are made volving strategies to improve on the issuance of nutrition education to PWHA at the CC.

1. To be able to reach out to as many clients as possible it is suggested that general nutrition informative talks aiming at improving the clients' nutritional status, should be given to the clients by qualified nutrition educators as they wait for CCC services in the reception areas.

2. It is recommended that the option of group counselling sessions should be explored as a viable option in enabling the nutrition educators to be able to reach out to more clients. Afterwards, depending on nutritional assessments of PWHA, those individuals from the group, considered at a higher nutritional risk could be singled out for further "one on one" counselling. This would also ensure frequent provision of nutrition education to more clients.
3. It is recommended that NASCOP conducts meticulous training for all nutrition educators handling clients in the CCC to give them equal awareness on the prerequisite nutrition information for PWHA, recommended nutrition protocols and nutrition education support materials. This would result in sound delivery of nutritional knowledge on the role of food in management of HIV/AIDS.
4. Because of the serious understaffing of nutrition educators in the CCC, It is recommended that the Ministry of Health should urgently addresses the issues of understaffing of nutrition educators in the health centres in general. If possible each CCC should be assigned its own nutrition educators for more effective nutrition management of the clients.
5. NASCOP should strengthen its monitoring capacity for all the components in the CCC to ensure that the education component is being well implemented. Constant monitoring and evaluation of the nutrition education component should be carried out to track progress on the implementation of the outlined nutritional education protocols.
6. Though there are prevailing laws safeguarding PWHA interests at the work place and from their employers, they still suffer from fear of job loss which directly

influences the amount of time PWHA have at their disposal to seek for treatment from the CCC. It is recommended that the government becomes more stringent in enforcing of these laws to ensure PWHA do not feel victimised at the work place.

7. It is also recommended that before exposure to nutrition education sessions, nutrition educators need to asses the levels of knowledge their clients have and then conduct post-evaluation after the sessions to find out resulting changes. This is necessary to find out if the education sessions have any impact.
8. The operating hours of the CCC should be extended to acccommodate those PWHA who are in employment.
9. Nutrition in HIV/AIDS is a dynamic field with new information constantly being released after research has been conducted. It is recommended that PWHA together with their household members, especially those charged with responsibility of meal preparation, be encouraged to attend nutrition education sessions at the CCC in order to benefit from new and current information on effective nutrition for PWHA.
10. The internet is a powerful modern communication channel. With internet literacy being encouraged in all sectors countrywide, the Division of Nutrition which is in charge of nutrition information dissemination should come up with a news corner in its website to post current nutrition updates related to HIV/AIDS from which clients could be directed to source for credible information.

Papers for Publication

Paper 1; Nutritional status of PWHA and perceptions on the nutrition education session at the Comprehensive Care Clinics by both the clients and nutrition educators

Abstract

A quantitative cross sectional study was carried out on 152 clients, five nutrition educators and three nutrition education sessions in three Comprehensive Care Clinics to establish the nutritional status of the clients attending the clinics. The study also sought to find out the perceptions of both the clients and nutrition educators on the nutrition education sessions at the clinics using qualitative methods.

Data was collected using anthropometry, structured questionnaires, focus group discussions and through passive participant observations. Nutrition status was determined using Body Mass Index. SPSS version 12.0 and EPI-INFO computer software were used to section and analyse the data. P value for statistical significance was set at $p<0.05$.

The study results showed that BMI of most of the clients (64%) was between 18.5kg/m^2 and 24.49kg/m^2; which was within the normal range for adults based on the World Health Organisation cut off points. There was a significant association between BMI and target sites, ($p<0.05$). Clients from Riruta clinic had higher Body Mass Index compared to those from Rhodes/Ngaira who had had lower BMI. Correlation and analysis of variance between nutritional status and demographic characteristics of gender, marital status and educational level did not reveal any significant associations.

Though clients visited the Comprehensive Care Clinics they had difficulties in gaining access to the nutrition educators. Two thirds of the clients, 66% reported that they had received nutrition education. The clients also perceived nutrition education as useful. Analysis of Variance between perceptions of those who felt that the nutrition education offered in the CCC was very useful and the knowledge that HIV/AIDS increases the body nutritional requirements showed a significant association $p< 0.01$ Similar analysis between those who perceived nutrition education as very useful and knowledge that increased nutrient intake would help PWHA counter infections was also significant $p<0.01$.

Nutrition educators felt that the nutrition education they were giving was inadequate. Observations also revealed that protocols outlined in the Kenyan nutritional guidelines regarding the issuing of nutrition education to clients in the clinics were not being followed.

The following are the study recommendations; A more concerted effort be made in monitoring the nutritional education aspect in the clinics to ensure that the education component is well implemented. Constant monitoring and evaluation of the nutrition education component should also be carried out regularly to track progress on the implementation of the outlined nutritional education guidelines.

It is also recommended that The Ministry of Health in Kenya should urgently address the issue of lack of enough nutrition education staff in the clinics by increasing the numbers of nutrition educators posted to the clinics.

Key words
Nutritional status. Nutrition education, Comprehensive Care Clinics HIV/AIDS, Nutrition education programs, Perceptions.

Introduction

AIDS is a combination of illnesses caused by the retrovirus HIV that weakens the immune system. The virus is slow acting and impairs the body's defence system over a period of time. The amount of time it takes from when HIV infects the body until it becomes full blown AIDS depends on the general health and nutritional status of the person before and during the time of HIV infection (FANTA, 2001). Good nutritional status increases resistance to infection and disease, improves energy levels and thus makes a person generally stronger and more productive. Immune impairment caused by HIV leads to malnutrition which compounds immune impairment contributing to rapid progression towards AIDS. Low nutritional status in people with HIV implies faster progression towards AIDS because their bodies cannot fight off infections effectively. Balanced nutrition could help the body fight back against ravages of the disease, and by maintaining body weight it can support drug treatment and prevent poor nutritional status. Visser, Labadarios, and Labuschagne (2004) nderscore the importance of balanced nutrition by showing how it bolsters the immune system and helps the body fight back against the ravages of disease.

Everyone infected with the HIV virus needs a nutritionist soon after diagnosis to advice on their dietary intake is adequate to support their health. The nutritionist doubles up as a nutrition-educator and will also help them develop appropriate eating plans. Nutrition education has become the basic concept in provision of care for PWHA, to improve their

nutrition, health, quality of life and duration of survival. This education, thus become a crucial component of nutrition support services necessary in maintaining health. Nutrition education is an important tool for health and nutrition workers (Nyankuru,2002) and can be used effectively towards improvement of health and nutritional status of the risk groups. It is therefore imperative that nutrtion education be conducted in such a manner that PWHA see its fundamental role in their wellbeing so as to achieve maximum compliance in their meal plans. If successfully done it is hoped that it will promote compliance to acceptable diets, improve antiretroviral drug efficacy and manage side effects of the drugs. There is need to identify effective methodology and resources which could be used in diet counselling to improve nutritional education.

Nutrition education involves teaching clients about importance of nutrition, providing education materials that reinforce methods about healthy eating and teaching skills essential for making dietary change. In addition it should provide information on how to sustain behaviour change. If this education is to have any impact it should be linked to ongoing programs

Nutrition education programs

Nutrition education programs should ensure PWHA are respectfully treated and that nutrition educators are competent to empower their clients to make choices consistent to their own socio-economic empowerment. Greater satisfaction with nutrition education should translate to improved attendance to nutrition education sessions which would result in better dietary practices (MEP,2001). Nutrition educators need to operate on the basis that new ideas, services or products can best be introduced if the intended

beneficiaries see them as fulfilling their own aspirations and well being (Februhartanty, (2005)

It has been demonstrated that successful nutrition education needs systematic content delivery, educational teaching and learning materials as well as educators training programs (Olivares, Andrade, Kain, et al,2005)

Research question

1. What is the perception of the nutrition education session in the CCC by both PWHA and nutrition educators?

Study Objectives

1. To establish if there was a significant relationship between the nutritional status of PWHA and their socio-demographic characteristics.
2. To examine the perceptions of the nutrition education sessions by both the nutrition educators and PWHA.

Study hypotheses

1. There is no significant difference in the nutritional status of PWHA and socio-demographic characteristics.
2. Knowledge about role of foods by PWHA, leads to positive perceptions of nutrition education by PWHA.

Study site and selection of subjects

The study was conducted in Nairobi District, Nairobi Province of Kenya. Kenya is located in East Africa and lies between latitudes 4.21 ON and 4.28 OS and longitudes 34

OE and 42 OE. It is divided administratively into eight provinces namely Nairobi, Central, Coast, Eastern, North Eastern, Nyanza, Rift Valley and Western.

The study was carried out in the Comprehensive Care Clinics based in randomly selected divisional health centres. Sample size was computed using the prevalence rate for HIV infections in Nairobi which was 9.9% (CBS,2003). The Fisher et al formulae was used to compute the clients sample size. The total number of clients interviewed was 152. All the five nutrition educators in the randomly selected CCC were targeted for study. Three nutrition education sessions were observed through use of the observation guide.

Multi stage sampling procedure was used to select the CCC to be studied. Nairobi province was selected purposively because records indicate that the nutrition education component of the CCC had been incorporated since early 2005 (NASCOP,2007). The three divisions from the three MOH administrative areas were selected randomly, one from each area. Simple random sampling was also used to select the CCC from where the client sample population was drawn.

Attendance records from August 2007 to August 2008 showed that a total of 1212 clients honoured their once a month clinic appointments,(Table 3.1). These comprised of 588, 384 and 240 clients from Riruta, Rhodes/Ngaira and Makadara CCC respectively. The average expected number of clients turning up for clinic services during a clinic day was calculated using these attendance records from August 2006-

Aug 2007. Average attendance during this period on a clinic day was 49 clients for Riruta CCC, 32 clients for Rhodes/Ngaira CCC and 20 clients for Makadara CCC.

Self weighting was done to ensure sample selection was proportional using the following formulae;

Riruta CCC	Average attendance (49) / 100 x 152 clients = 74 clients
Rhodes/Ngaira CCC	Average attendance (32) / 100 x 152 clients = (48.64) 48 clients
Makadara CCC	Average attendance (20) /100 x 152 clients = 30 clients

This resulted in 74 clients from Riruta CCC, 48 clients from Rhodes/Ngaira CCC and 30 clients from Makadara CCC being selected. Riruta CCC which had the highest number of clients turning up for services had a higher proportion of clients selected.

Sampling frames were made up from the expected number of clients in the respective CCC for the specific day. Linear systematic random sampling was used to select the clients eligible for the study.

Data collection

Four instruments were used to collect both qualitative and quantitative data. These were;

- A semi-structured clients questionnaire for 152 clients
- A nutrition education staff questionnaire for five nutrition educators
- A guide for focus group discussions for 21 participants in two groups

An observation guide for the nutrition three education sessions

Pre-testing of the clients and nutrition education staff questionnaires was done at Kangemi CCC in the Nairobi West Area with fifteen PWHA and two nutrition educators participating. The pre-test aimed to test the appropriateness of the pre-designed questionnaires, tools, methodology and also to find the estimated amount of time it would take to administer the questionnaires and tools .

The client's questionnaire captured information on gender, height and age which were used to compute the client's nutritional status. It also sought information on the clients socio-demographic characteristics. The nutrition educators questionnaire aimed at establishing if the educators felt that the education they provided was adequate and their clients' response to the information given. Two Focus Group Discussions sessions were conducted. These discussions were used to study reactions to the nutrition education sessions and client satisfaction with the nutrition education session.

PWHA and nutrition educators were selected randomly from the CCC during Support Group Meetings (SGM), those selected were not part of the interviewed clients.Present were members of NGO's involved in HIV/AIDS and VCT counsellors because they had been observed offering nutrition information in the CCC vicinity. The sessions were used to study reactions to the nutrition education sessions, adequacy of information provided and satisfaction with the education sessions. The meetings lasted one to one and a half hours and were conducted on Sunday afternoons to allow for maximum participation. During the meetings the principal investigator explained the objectives of the research

and of the meeting to the participants and then posed questions targeted at gauging their views on both the nutrition education sessions and materials. The information was recorded on flipcharts and expounded on in form of discussion.

The nutrition educator's questionnaires were self administered and they aimed at;

- Finding out problems they encountered during the nutrition education sessions and use of the recommended protocols in the CCC.
- Their perceptions to the nutrition education session and their attitudes to their role of provision of nutrition education to their clients.

Observation guides were developed and used to collect information during the nutrition education sessions. Three observations "Passive Participant" were conducted. The observer was present at scene of activity but was unobtrusive. Client- education provider interaction was observed using a checklist and required information recorded

Statistical analysis

Statistical Package for Social Sciences (SPSS) version 12.0 and EPI-INFO computer software were used to session and analyze the quantitative data. Data was grouped according to the data collection sites and category of the respondents. Qualitative analysis was used on the data obtained from the nutrition educators questionnaires, FGD and observation guides.

Information from the FGD was recorded on flipcharts and field notebooks. Content analysis of the flipcharts and recorded contents was then carried out and the resulting

information was synthesised and summarised. Rating of the nutrition education sessions and variable associations were summarised in tables.

Results

A total of one hundred and fifty-two CCC clients were interviewed. Five nutrition educators' four females and one male were also interviewed. Three nutrition education sessions in the CCC were observed. Two FGD discussions were conducted.

The results are presented in two sections, the nutritional status of the clients and perceptions of the clients and nutrition educators on the nutrition education sessions.

There were 71.1% female and 28.9% male clients. The mean age was 35.7 years (SD=8.17). The outlier client age (67) was excluded from the age analysis to avoid skewing and distortion of data. About half of the clients, 55.3% earned an income of less than KES 10000 which is considered as income for the "low income group" (CBS, 2005). As summarised in Table 1, only 6.6% of the clients had no formal schooling. A large percentage had formal education with the majority, 48.7 % having attained primary level of schooling. Slightly more than half of the clients, 51.3% were married.

Client's nutritional status

Body Mass Index was used to describe the client's nutritional status. Cut of points for BMI outlined in Table 3.2 (Chapter 3) were based on WHO (2000) classifications and were used to categorise respondents. As shown in Table 1, the results indicated that the BMI of most of the clients 64% was within the normal acceptable range of 18.5kg/m^2 and 24.49 kg/m^2. Only 18% of the respondents had a body mass index of above 25.0 kg/m^2

classified as being overweight and 12% had BMI below18.49kg/m^2 classified as underweight. Results also showed that 6% of the clients were obese and 5.3% were severely malnourished.

A chi square analysis revealed a significant association between BMI and target site $p<0.05$ (Chi square=11.057, p-value=0.026). Riruta CCC had the lowest underweight prevalence and Makadara CCC had the highest overweight prevalence followed by Rhodes/Ngaira.

Table 1: Distribution of clients by demographic characteristics and BMI

	Riruta CCC 74	**Makadara CCC 30**	**Rhodes/Ngaira CCC 48**	**Total**
	%	%	%	
DEMOGRAPHIC				
Gender distribution	24.3	23.3	39.6	28.9
Males	75.7	76.7	60.4	71.1
Females	**100**	**100**	**100**	**100**
Total				
Mean Age	35.1 years	35.2 years	37.0 years	35.7 years (mean)
Education levels				
None	6.8	3.3	8.4	6.6
Primary level	55.4	36.7	45.8	48.7
Secondary level	17.6	20.0	22.9	19.7
Post secondary	20.2	40.0	22.9	25.0
Total	**100**	**100**	**100**	**100**
Marital status				
Single	16.2	26.7	22.9	20.4
Married	54.2	40.0	54.2	51.3
Divorced	18.9	23.3	12.5	17.8
Widowed	10.8	10	10.4	10.5
Total	**100**	**100**	**100**	**100**
NUTRITIONAL STATUS (BMI)				
<18.49kg/m^2	9.7	13.3	14.6	12
18.5-24.9kg/m^2	75.0	43.3	60.4	64
>25kg/m^2	15.3	43.3	25.0	24
Total	**100**	**100**	**100**	**100**

Analysis of variance ANOVA to establish if there was a significant difference between BMI and demographic details (gender, marital status and educational level) showed no

significant differences at 5% level of significance. There were no significant associations between BMI and the clients' demographic characteristics, $p>0.05$. Table 2 shows ANOVA for BMI gender, marital status and educational level.

Correlation analysis of age with BMI also did not reveal any significant relationship at 5% level of significance, $p>0.05$.

Table 2; Analysis of variance (ANOVA) for BMI and selected demographic characteristics.

Demographic characteristics	F-value	P-value
Gender	0.721	0.397
Marital Status	0.643	0.589
Educational Level	2.380	0.072

(P<0.05)

Number of visits to the Comprehensive Care Centres (CCC) by clients

Clients were given monthly appointments to come to the CCC. In a year it was expected that they would honour their appointments at least twelve times. The respondents were asked the number of times they had visited their respective CCC since January 2006. Figure 1 showed that on average most clients in Riruta had visited their CCC 12 times, in Makadara 8 times and in Rhodes/Ngaira 9 times. The data showed that there were both new and old clients at the CCC because the number of visits ranged from 2 to 36 times (SD=7.9). The modal number of visits was four and the median number of visits was six.

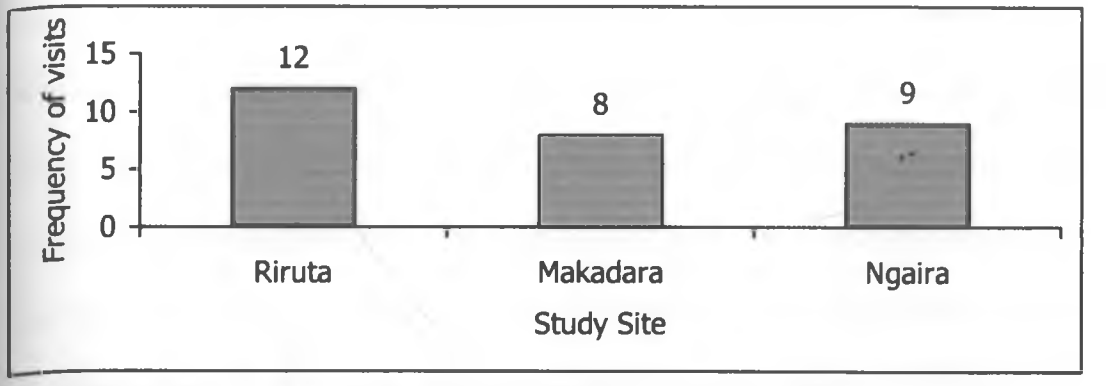


Figure 1. Average number of times of visiting the CCC by clients

Asked if they had ever talked to a nutrition educator during their visits to the CCC, almost all the clients (93%) said they had not while only 7% said they had talked to an educator, These comprised of five from Riruta, four from Makadara and one from Rhodes/Ngaira CCC. This information is outlined in Figure 2.

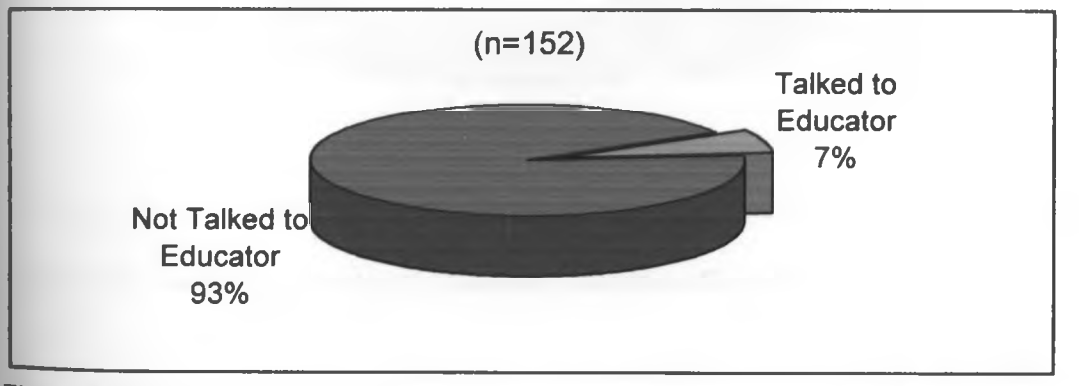


Figure 2. Respondents who had talked to a nutrition educator during the visit

Perception about Nutrition Education offered in the CCC

In the CCC it was noted that clients received nutrition education from nutrition educators, doctors, nurses, VCT counsellors and even from their fellow clients during support group meetings. Nutrition education was seen as useful if it made the clients realise the need to

modify their diets to improve their nutritional status. Client's knowledge of two key nutritional practices was also a reflection of the importance of the nutrition education, Clients were asked about their perception on how useful the nutrition education offered in the CCC was, irrespective of who had offered it. Out of the 111 of the clients who had received some nutrition education at the CCC, more than two-thirds (66%) of them felt it was very useful, 27% felt it was useful and only 4 % of the clients felt it was not useful. Three of the clients were undecided whether it was useful or not. The results are reflected in Figure 3.

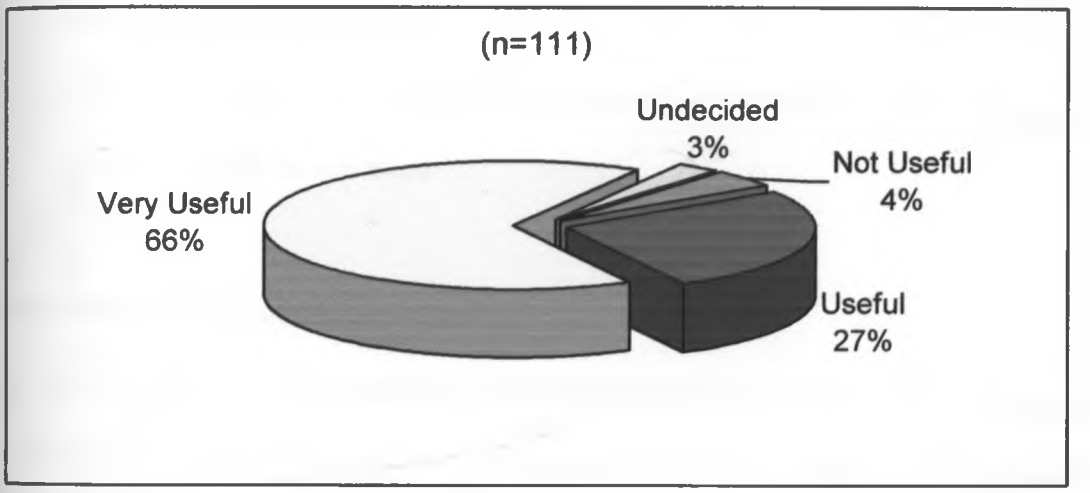


Figure 3. Perception by clients on the Nutrition Education offered in the CCC

Analysis of variance between perceptions of those who felt that the nutrition education offered in the CCC was very useful and the knowledge that HIV/AIDS increases the body nutritional requirements showed a significant association $p< 0.01$ ($p=0.001$). Similar analysis (ANOVA) between those who perceived the nutrition education as very useful and knowledge that increased nutrient intake would help PWHA counter infections was

also significant $p<0.01$ ($p=0.001$). Chi square analysis did not reveal significant differences between the clients nutritional status and their perception of the nutrition education process, $P>0.05$ (Chi square=0.390).

Sufficiency of information offered during nutrition education sessions.

The nutrition educators were asked if they felt that the information they offered during the nutrition education sessions was sufficient. Thy all agreed it was not and gave the following three reasons.

1. Food demonstrations needed to be performed but food models were not available.
2. Time available was not enough to discuss all the important nutrition related issues the clients needed information in.
3. There was basic lack of printed materials and general teaching aids, necessary for successful nutrition education

Observation of the education session

Three nutrition sessions were observed. The sessions lasted for 19 minutes in Makadara, 24 minutes in Riruta, and 27 minutes in Rhodes/Ngaira CCC. A total of 70 minutes of observation was achieved. Table 3 outlines the actions which were expected to be performed as outlined in the GATHER process, and shows the corresponding number of educators from the three observation sessions performing or not performing the actions.

Table 3; Summary of client provider actions during nutrition education sessions

	Actions by the nutrition educators	Performed actions	Did not perform action
A	Greeted client warmly	***	
B	Greeted client by name		***
C	Asked about their well being	*	**
D	Asked about their food intake and problems encountered		***
E	Carried out nutritional assessment using BMI	*	**
F	Shared results of biochemical and clinical analysis with their clients		***
G	Identify nutritional needs		***
H	Explained alternative choices to address nutritional needs	*	**
I	Helped clients set nutritional goals		***
J	Helped clients make informed choices to attain nutritional goals		***
K	Explained clearly to their clients their choices	*	**
L	Treated client with respect	***	
M	Asked open ended questions		***
N	Encouraged client to ask questions	*	**
O	Used nutritional education materials	*	**
P	Used clients records	***	
Q	Assured client of confidentiality		***
R	Discussed a return visit		***

*** Represents a nutrition educator carrying out the outlined tasks.**

Discussions

The study sought to answer the research question "What is the perception of the nutrition education session in the CCC by both PWHA and nutrition educators?" Based on the results it was appropriate to conclude that majority of the clients and all the nutrition educators felt the sessions were useful and therefore crucial to their wellbeing of the clients although most of the clients had not been exposed to them. Clients took the

initiative to look for additional nutritional information from other media sources to improve on their nutritional knowledge.

There was a significant association between positive perceptions of the nutrition education sessions and knowledge that HIV/AIDS increases the body nutritional requirements. The hypothesis that "Knowledge about role of foods by PWHA, leads to positive perceptions of nutrition education by PWHA" was therefore not rejected.

Demographic and socioeconomic characteristics

From the findings it was evident that there were no significant relationships between nutritional status of PWHA and their socio-demographic characteristics. The hypothesis that, "There is no significant difference in the nutritional status of PWHA and their socio-demographic characteristics" was therefore not rejected. A significant association was found between the nutritional status of PWHA and the study sites. Half of the clients fell in the low income earner bracket, of those earning less than KES 10000 per month (CBS, 2005). This finding was not surprising considering the fact that these were public CCC where health services were offered free of charge to clients and those who were not economically empowered were likely to seek services from them.

Ministry of Health report (NASCOP, 2007) states that in Kenya the AIDS epidemic affects the productive groups and especially those at the peak of their life from the ages 20 to 44 years. The ages of the clients ranged from 19-67 years, with the average age being 35 years. The distribution showed that HIV infection among the adult clients cut

across all the age groups. This was similar to (Warentho, 2005) findings on distribution patterns of HIV among the adult in Kenya attending Kenyatta National Hospital (MOH,2007).

Nutritional status

Low BMI in PWHA is an indicator of declining nutrition and health status (Warentho,2005). The BMI indicated that most of the clients were not malnourished. The study revealed that Riruta CCC had the lowest prevalence of underweight clients and Makadara had the highest prevalence of those overweight. It appeared that in Riruta CCC clients were able to have better access to nutritious food. Riruta CCC was found to be supported by an NGO "Liverpool" and food aid distribution to malnourished clients was evident a fact which may have contributed to their better nutritional status.

Visits to the CCC in relation to nutrition education

The number of visits to the CCC by clients was important because there was a high likelihood of being exposed to nutrition education when they were within the CCC vicinity. The more frequently clients came to the CCC the higher the chances were that they would be exposed to nutrition education. The fact that clients had received nutrition information from both nutrition educators and non nutrition educators was a worrying trend because nutrition information from untrained educators could convey wrong nutritional messages if not adequately explained to PWHA.

Clients visiting the CCC had monthly appointments to attend clinic at the CCC for nutrition monitoring and education among other services offered. Studies indicate that nutrition counselling coupled with food demonstration leads to a decrease in body weight loses for PWHA when implemented as soon as the individuals had been confirmed as HIV positive (Ojofeitimi and Fakande, 1998). It is advisable that nutrition education be given to clients during their preliminary visits to the CCC so that clients can begin implementing the necessary nutrition adjustments as early as possible.

Nutrition education sessions

During the nutrition education sessions the educators did not greet the clients by name though they had the clients' records in front of them. This made the sessions impersonal and could have contributed to some clients perceiving the education sessions as not useful. Clients were also not asked about the nutritional problems they faced in order to assist them set realistic nutritional goals. This implied the sessions were not client centred. None of the educators bothered to share the results of the biochemical analysis with their clients which would have resulted in the patient being aware of how their bodies were reacting to the disease condition. If patients knew their results they might make greater effort to adjust their diets. Use of the GATHER process during nutrition education sessions should be advocated for because it is client centred. Through this process the nutrition educators listen to their clients attentively and then base the nutrition education from the information derived from their clients. This would increase the likelihood that clients would ensure that they consult the nutrition educator every time they come for their clinical appointments at the CCC.

Conclusions

The following are the different conclusions drawn from the study.

1. Demographic and socio-economic factors do not seem to influence the nutritional status of PWHA.
2. Both PWHA and nutrition educators perceive nutrition education sessions as an important process in provision of nutrition education.
3. Those PWHA who have knowledge of role of foods in management of their condition tended to have positive perceptions of nutrition education sessions.

Recommendations

1. The study recommends that a more concerted effort be made in monitoring the nutritional education aspect in the clinics by NASCOP to ensure that the education component is well implemented. Constant monitoring and evaluation of the nutrition education component should also be carried out regularly to track progress on the implementation of the outlined protocols in the nutritional guidelines
2. The study recommends that group counselling sessions in the CCC should addressed as a more viable option in ensuring the nutritionists be able to reach out to more of their clients but depending on individual clients nutritional assessments, those clients considered at nutritional risk should be singled out for 'one on one' nutrition education sessions. This would also ensure frequent provision of nutrition education to a lager number of clients.
3. It is felt that meticulous focus be given to meticulous training of nutrition educators handling clients in the CCC to give equal awareness to all of them on

the recommended protocols and materials for effective nutrition education. Other non trained nutrition educators found in the CCC should also benefit from this training. This would result in sound delivery of nutritional information to PWHA.

4. Results showed that clients had discussed their nutritional issues with non nutrition educators in the clinic and that the nutrition educators had expressed their sentiments on lack of time to attend to their CCC clients effectively. It is recommended that more nutrition educators should be assigned in the CCC in order for clients to have easy access to them.

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Paper 2; Knowledge of key nutritional practices for PWHA and their food dietary diversity. A study of the Public Comprehensive Care Clinics in Nairobi

Abstract

The study objectives were to asses the association between their nutritional status and dietary diversity practices of People With HIV/AIDS in the Comprehensive Care Clinics for People with HIV/AIDS. Of importance also was and the knowledge PWHA had about the role of food in relation to their condition. The study summarised the dietary diversity patterns of the clients and their knowledge of key nutritional practices for People With HIV/AIDS. One hundred and fifty two clients from three clinics were randomly selected for the study. Data were collected on the numbers of clients having knowledge of key nutritional practices and their individual dietary diversity practices. Data collection was through structured interviews, observations and focus group discussions. SPSS (12) and EPI-INFO programs were used to analyse the data. Data from the study showed the mean BMI for the clients was 22.1 kg/m^2 (SD=3.3) for the male and 23.1 kg/m^2 (SD=4.3) for the female clients. It was discernible that the diets were not very diversified. The most frequently consumed foods were the cereals by 100% of the clients and the least consumed foods were milk and milk products by 21.7%. The study results revealed a significant association between nutritional status and target site $p<0.05$ (P=0.026). There was a negative correlation between Body Mass Index and Individual Food Dietary Diversity, $P<0.001$ (P= -0.016). There was no significant associations between Individual Food Dietary Diversity scores and Body Mass Index $P>0.05$, (P=0.843). The findings led to the conclusion that most clients were knowledgeable about the key nutritional practices of People With HIV/AIDS but their diets were not diversified.

This study recommends that nutrition information for People With HIV/AIDS should be presented clearly with aim of making them knowledgeable and encouraging them to practice the acquired knowledge. Measures should also be put in place to ensure People With HIV/AIDS have access to diversified food intakes which could be done through advocacy of kitchen gardens with diversified vegetables.

Key words

Nutritional practices, Nutritional knowledge, Individual Food Dietary Diversity, People with HIV/AIDS, Comprehensive Care Clinic, Nairobi.

Introduction

AIDS is a combination of illnesses caused by the retrovirus HIV that weakens the immune system. Good nutritional status increases resistance to infection and disease, improves energy levels and thus makes a person generally stronger and more productive. Knowledge of nutrition for PWHA should result in adoption of key nutrition practices (NASCOP, 2005). Balanced nutrition could help the body fight back against ravages of the disease and by maintaining body weight it can support drug treatment and prevent detoriation of the nutritional status. A healthy balanced diet is essential for a well functioning immune system and is the cornerstone of HIV/AIDS treatment in combination with antiretroviral medication, (Visser, Labadarios and Labuschagne, 2004).

Hartloy, Torheim and Oshaug (1998) pointed out that nutrients essential to meet nutritional requirements cannot all be found in a single food item but must come from a diet composed of a variety of foods. The only exceptional food is breast milk which has

all the nutritional requirements needed in the first early months of life. A good diet could bolster the immune system and boost energy levels. A variety of food should be eaten to ensure that the body is getting adequate energy, protein and micronutrient needs. Dietary diversity is a qualitative measure of food consumption that measures and reflects a household access to a wide variety of foods and is also a proxy for the for the nutrient adequacy of the diets of individuals (FAO, 2007) and WFP (2007).

According to World Food Programme (FAO, 2007) IFDD can be used as a proxy indicator for nutrient adequacy as it shows consistent association with dietary adequacy and caloric intake. NASCOP (2005) explains that eating a variety of foods can ensure sufficient nutrient intake

Individual Food Dietary Diversity

Individual Food Dietary Diversity (IFDD) scores aim to capture nutrient adequacy in diets and they have been suggested as a cost effective approach in measuring dietary quality at both household and individual level (FAO, 2007). Hartloy et al (1998) indicate that diverse diets have been associated with prolonged longevity and improved health status, In their study in West Africa, they showed that a highly diversified diet reflecting consumption of foods from different sources portrayed a diet of high nutritional quality. Both Gina, Pedro, Serghieri et al (2006) and FAO (2007) point out the weakness of using IFDD is the reference period given for recording food intake. The use of one previous twenty four hours food recall period does not provide information on the indication of an individual's habitual diet. Gina et al (2006) have expressed the need for more comparable validation studies for rating dietary diversity scores.

Nutrition knowledge

HIV/AIDS increases body's nutritional requirements and leads to opportunistic infections which are often associated with increased body's nutrition requirements and food intake (Piwoz, 2005). Knowledge of nutrition for PWHA should result in the following critical nutrition practices by PWHA; (NASCOP, 2005).

- Have periodic nutritional assessments especially weight measurement.
- Increase energy intakes through consumption of balanced diet and where those with Body Mass Index (BMI) <16 get supplementary food support.
- Maintain high levels of sanitation, food hygiene and water safety as they are vulnerable to infections.
- Practice positive living behaviours
- Engage in physical activities or exercises which will stimulate appetite or health.
- Eat small frequent meals as smaller portion ensures the stomach absorbs meals more efficiently.
- Eat variety of foods to ensure sufficient nutrient intake.
- Drink plenty of clean safe water.
- Seek prompt treatment for all opportunistic infection and manage symptoms with dietary practices.
- Manage drug-food interactions and side effects
- Children under six months born to HIV positive mothers who are on replacement foods should get supplement of 50000 IU of Vitamin A and those on modified formulae should receive additional nutrients. [7]

Study objectives

1. To asses the association between nutritional status and the dietary diversity practices of PWHA
2. To asses the knowledge PWHA have about role of food in relation to their condition.

Study hypothesis

1. There is no association between the nutritional status and the dietary practices of PWHA

Study site and selection of subjects

The study was conducted in Nairobi District, Nairobi Province of Kenya. Kenya is located in East Africa and lies between latitudes 4.21 ON and 4.28 OS and longitudes 34 OE and 42 OE. It is divided administratively into eight provinces namely Nairobi, Central, Coast, Eastern, North Eastern, Nyanza, Rift Valley and Western. The City of Nairobi which covers an area of 684Km² constitutes Nairobi District. It has varied topography with an average altitude of about 1661 meters above sea level. It is a cosmopolitan and multicultural city and is one of the largest and fastest growing cities in Africa. Currently the city's population is estimated at 2,9490,11 with a population density of 4,230people/Km². Nairobi is administratively divided into eight divisions.

The Ministry of Health has grouped these eight divisions under three distinct administrative areas namely Nairobi East encompassing Makadara and Kasarani Divisions, Nairobi West encompassing Westlands, Dagoretti and Embakasi Divisions and

Nairobi North encompassing Pumwani, Langata and Nairobi-Central Divisions. The study was carried out in the Comprehensive Care Clinics based in randomly selected divisional health centres. Only one CCC was selected from each division because their operations were conducted in a similar manner.

Sample size was computed using the prevalence rate for HIV infections in Nairobi which was 9.9% (CBS, 2003). The Fisher et al a formula (Wayne, 1999) was used to compute the clients sample size. The total number of clients interviewed was 152.

Multi stage sampling procedure was used to select the CCC to be studied. Nairobi province was selected purposively because records indicated that the nutrition education component of the CCC had been incorporated since early 2005 (NASCOP,2007). The three divisions from the three MOH administrative areas were selected randomly, one from each area. Simple random sampling was also used to select the CCC from where the client sample population was drawn.

Attendance records from August 2007 to August 2008 showed that a total of 1212 clients honoured their once a month clinic appointments as outlined previously in Table 3.1. These comprised of 588, 384 and 240 clients from Riruta, Rhodes/Ngaira and Makadara CCC respectively. The average expected number of clients turning up for clinic services during a clinic day was calculated using these attendance records from August 2006-Aug 2007. Average attendance during this period on a clinic day was 49

clients for Riruta CCC, 32 clients for Rhodes/Ngaira CCC and 20 clients for Makadara CCC.

Self weighting was done to ensure sample selection was proportional using the following formulae;

Riruta CCC	Average attendance (49) / 100 x 152 clients = 74 clients
Rhodes/Ngaira CCC	Average attendance (32) / 100 x 152 clients = (48.64) 48 clients
Makadara CCC	Average attendance (20) /100 x 152 clients = 30 clients

This resulted in 74 clients from Riruta CCC, 48 clients from Rhodes/Ngaira CCC and 30 clients from Makadara CCC being selected. Riruta CCC which had the highest number of clients turning up for services had a higher proportion of clients selected.

Sampling frames were made up from the expected number of clients in the respective CCC for the specific day. Linear systematic random sampling was used to select the clients eligible for the study.

Data Collection

Three instruments were used to collect both qualitative and quantitative data. These were;

- A semi-structured clients questionnaire for 152 clients
- An Individual food Dietary Diversity questionnaire for 152 clients
- A guide for focus group discussions for 21 participants divided into two groups

Pre-testing for the clients' questionnaire and the IFDD questionnaire was done at Kangemi CCC in the Nairobi West Area with fifteen PWHA and two nutrition educators participating. The pre-test aimed to test the appropriateness of the pre-designed questionnaires, tools, methodology and also to find the estimated amount of time it would take to administer the questionnaires and tools

The client's questionnaire captured information on gender, height and age which were used to compute the client's nutritional status. It also sought information on knowledge of the key nutritional practices for PWHA. The IFDD questionnaire sought information on variety of food intake by clients in the previous twenty four hours.

Two FGD sessions were conducted with a total of 21 clients. PWHA were selected randomly from the CCC during Support Group Meetings, those selected were not part of the interviewed clients. Present were members of NGO's involved in HIV/AIDS, the VCT counsellors and nutrition educators from other CCC apart from those sampled. The principal investigator explained the objectives of the research and of the meeting to the participants and then posed questions targeted at gauging their views on the nutrition information they had received from the CCC. This information was recorded on flipcharts and expounded on in form of discussion. The FGD meetings lasted one to one and a half hours and were conducted on Sunday afternoons to allow for maximum participation and yielded data on what they felt about the nutritional information they received at the CCC.

Statistical analysis

Data from the completed clients' questionnaire were verified, coded and edited to ascertain accuracy and completeness and then entered into a computer. Data was grouped according to the data collection sites and category of the respondents. Statistical Package for Social Sciences (SPSS) version 12.0 and EPI-INFO (6.04) computer software were used to session and analyze the quantitative data.

Data analysis was both descriptive and analytical. Descriptive analysis for quantitative data included, percentages, means, frequencies and cross tabulations. These data are presented in form of tables, charts and graphs. Cross tabulations were used to identify relationships among variables and significance tests were used to determine associations and their strengths. P value of statistical significance was set at $p< 0.05$. Qualitative analysis was used for the FGD analysis

Information from the FGD was recorded on flipcharts and field notebooks. Content analysis of the recorded contents was then carried out and the resulting information was synthesised and summarised. Constant responses to the questions were identified, grouped and interpreted with major differences being identified.

Results

A total of one hundred and fifty-two CCC clients were interviewed and two FGD discussions conducted. The results are presented in three sections;

- Demographic profile of the clients
- Clients nutritional status

- Nutritional status and IFDD
- Clients nutritional practices

Clients age and gender distribution

The ages of the interviewed clients ranged from 19 to 67 years with the mean age being 35.7 years (SD=8.17) The outlier client aged 67 years was excluded from the age analysis to avoid skewing and distortion of data. Majority of the clients seeking the services at the CCC were women e were female (71.1%) compared to males (28.9%). A similar trend of more females clients seeking out CCC services compared to males was discerned from all the three CCC as shown in **Table 1**.

Table 1: Male versus female clients visiting the various Comprehensive Care Clinics.

Gender	Riruta CCC		Makadara CCC		Rhodes/Ngaira CCC		Total %
	N=74	%	N=30	%	N=48	%	N=152
Male	18	24.3	7	23.3	19	39.6	28.9
Female	56	75.7	23	76.7	29	60.4	71.1

Figure 1 illustrates the sex distribution of the clients by their age categories. The highest category was females in the age category between 26 to 34 years. There were more female than male clients in all the age categories except for the category above 43 years where there were more male than the female clients were observed.

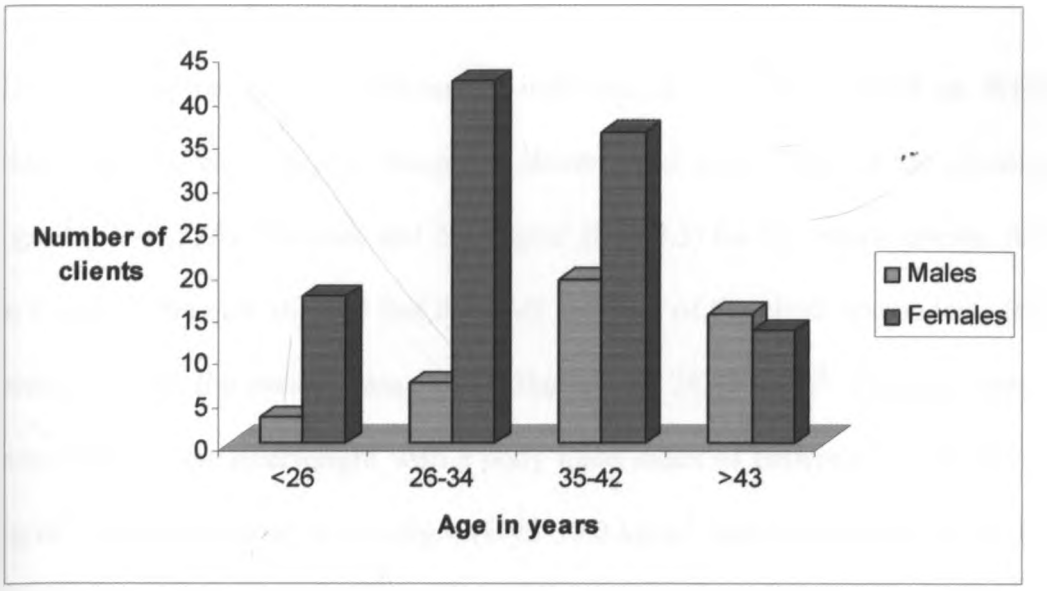

Figure 1: Distribution of the CCC clients by age and sex

Educational Levels

Only 6.6% of the clients had no formal schooling. A large percentage had formal education with the majority 48.7 % having attained primary level of schooling and 25% with post secondary education. As shown in **Table 2,** Comparison between the number of males and females clients with different levels of education revealed that more females 50.9% had primary level compared to males 48.7. More males 31.2% had secondary level of education compared to females 19.7%. The numbers of males (22.7%) and females (25.9%) having post secondary education was almost similar.

Table 2: Table 2: Clients education levels

Educational level	Males N=44	Females N=108	Total %
None	2.3	8.3	6.6
Primary	43.2	50.9	48.7
Secondary	31.8	14.8	19.7
Post secondary	22.7	25.9	25

Clients' nutritional status

The cut of points for BMI previously indicated in Table 3.10 based on WHO (2000) classifications, were used to categorise clients. The mean BMI for the clients was 22.1 kg/m^2 (SD=3.3) for the male and 23.1 kg/m^2 (SD=4.3) for the female clients. As depicted in Figure 2, the data showed that the BMI for most of the client respondents (64%) were normal, within the average range of 18.5kg/m^2 and 24.49 kg/m^2. Eighteen percent of the respondents were overweight with a body mass index of between 25.0 kg/m^2 and 29.99 kg/m^2. Those extremely overweight (BMI 30.0 kg/m^2 and 34.99 kg/m^2) were 4.7%, with 1.3% being obese with BMI>34.9 kg/m^2. Four percent 4.0% were wasted with BMI between 16.0 kg/m^2 and 17.49 kg/m^2. Those severely malnourished were 1.3% with BMI<16 kg/m^2.

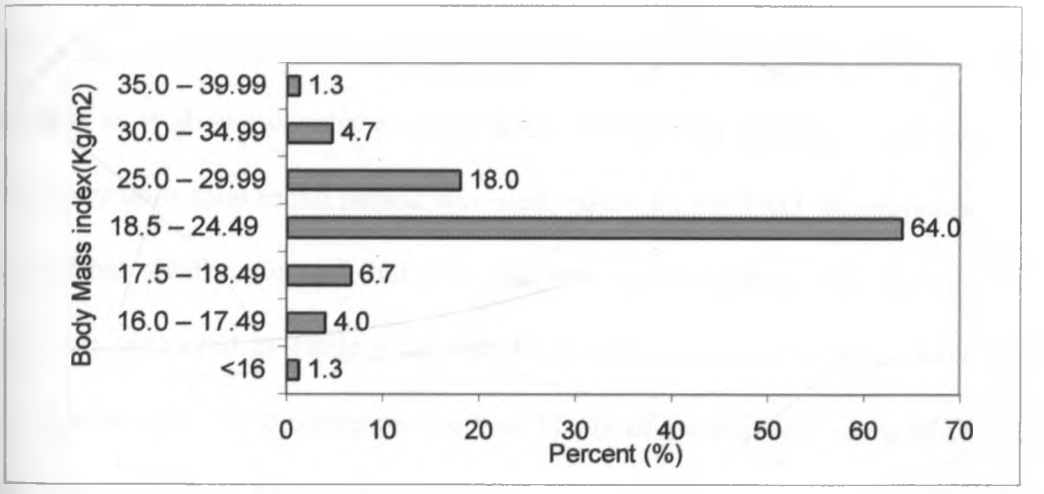

Figure 2: Body Mass Index of the Respondents

Data in Table 3 showed that in Riruta CCC 75% of the clients had normal ranges of BMI as compared to 43.3% in Makadara and 60.4% in Rhodes/Ngaira. Makadara CCC had the highest percentage of clients 43.3% who were overweight, while Rhodes/Ngaira CCC had the highest number of clients 14.6% who were underweight. A chi square analysis

revealed a significant association between BMI and target site $p<0.05$ ($P=0.026$). Clients in Riruta CCC had a significantly higher BMI and those in Makadara CCC had a significantly lower BMI.

Table 3: Cross tabulation of clients BMI by target site

Body Mass Index (BMI)	Target Site			
	Riruta (n=74)	Makadara (n=30)	Rhodes/Ngaira (n=48)	Total (n=152)
	%	%	%	%
Less than 18.5 kg/m^2 (Underweight)	9.7	13.3	14.6	12.0
18.5-24.9 kg/m^2 (Normal)	75.0	43.3	60.4	64.0

Nutrition status and Individual Food Dietary Diversity

The Individual Food Dietary Diversity Questionnaire (IFDD) formulated by FAO (Appendix 2 was applied on clients to assess their food intake variations. According to World Food Programme (FAO, 2007) IFDD can be used as a proxy indicator for nutrient adequacy as it shows consistent association with dietary adequacy and caloric intake. The twenty hour food recall period was used, based on the FAO recommendations that it has minimal recall error and that it is also less cumbersome to the respondents (FAO, 2007). As portrayed in Table 4 the minimum score for the IFDD was three, the modal score was six and the maximum score was 11 out of a maximum score of 16. The mean score was 6.4 (S.D of 1.697). No client had scores above 11. This showed the diets were not very diversified. The most frequently consumed foods were the cereals (100%) and vitamin A rich vegetables and tubers (85%). The least consumed foods were milk and milk products (21.7%) , sweets (26.3%) and oils and fats (31.6%). Most clients(79.6%) indicated they ate meals or snacks outside the home. Dark green leafy vegetables had been consumed by 30.3% of the clients.

Table 4: The Clients' Individual Food Dietary Diversity Scores

Dietary Diversity scores. Total score (16)	Frequency of clients N=152	Percent%
3	6	3.9
4	12	7.9
5	29	19.1
6	35	23.0
7	31	20.4
8	22	14.5
9	10	6.6
10	6	3.9
11	1	0.7

Table 5 showed consumption of foods was generally less diversified in all the study sites, 77%, 76.7% and 68.85 of the clients in Riruta, Makadara and Rhodes/Ngaira CCC respectively had scores less than 50%. Seventy seven percent (77%), 76.7% and 68.8% of the clients in Riruta, Makadara and Rhodes/Ngaira CCC respectively scored less than 50%. Rhodes/Ngaira CCC had a comparatively higher number of clients 31.2% with scores over 50% scores. Pearson correlation showed that BMI and IFDD were negatively correlated $P<0.001$ ($P= -0.016$). ANOVA between IFDD scores and BMI did not reveal any significant associations $P>0.05$, ($P=0.843$).

Table 5: Individual Food Dietary Diversity scores by target sites

	IFDD scores (%)		
Target Site	Clients with Scores < than 50%	Clients with scores > than 50%	Total %
Riruta	77.0	23.0	100
Makadara	76.7	23.3	100
Rhodes/Ngaira	68.8	31.2	100

Clients' nutritional practices

All PWHA need nutritional advice as early as possible because of the corresponding need to make urgent adjustments to their nutrient intake to improve their health status. The results in the Figure 3 indicate that more than 70% of the clients from the three target sites had changed their diets since they became infected with the HIV/AIDS virus. Seventy-four percent of the respondents in Riruta, 88% in Makadara, and 71% in Rhodes/Ngaira said their diets were different from what they were eating before they became infected with the HIV virus. In Makadara CCC 12 of the patients indicated they had not changed their diets.

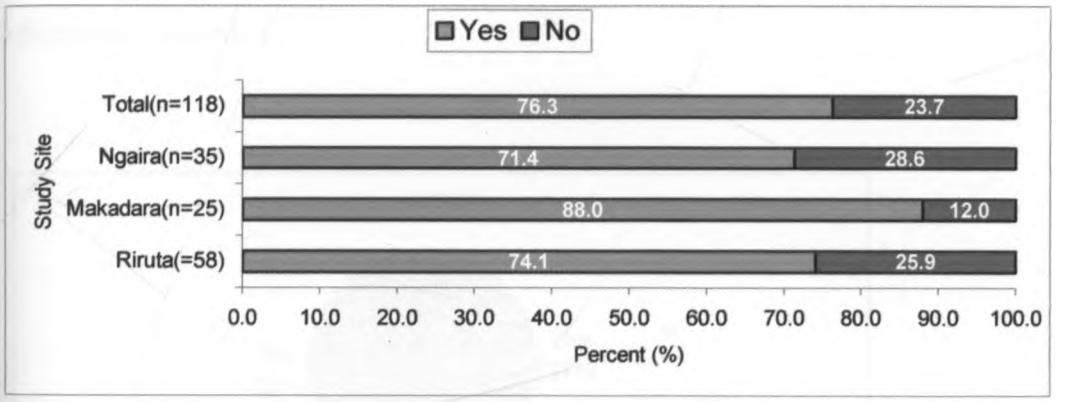

Figure 3: Percentage of clients who changed their diet after being infected with HIVAIDS virus

Further enquiry into the reasons why they felt they had to change their diet elicited the following responses.

- The clients felt that since they had acquired additional nutrition knowledge from the education sessions CCC (irrespective of who had issued the information) they had to make corresponding adjustments to their diets.
- The clients expressed the need to improve their health status in order to combat disease.

- Some clients indicated that a change in diet was necessary to assist the medication being taken to be more effective to the bodies.

Some of the foods which the clients listed as most important to their disease condition were; traditional green vegetables, fresh raw vegetables, fruits, ugali, beans, rice, ripe bananas, meat, chicken, fish, eggs and milk . Questioned on whether there were some foods they were required to eat but they did not eat, 63% of the clients (n=113) said no while 37% said yes as represented in Figure 4. Among the reasons the clients listed for not consuming the foods they were required to eat were the food costs (40%) and personal dislike of some foods by 25% of the clients. Thirty nine clients declined to respond to this question despite assurance from the researcher of the confidentiality of the information recorded.

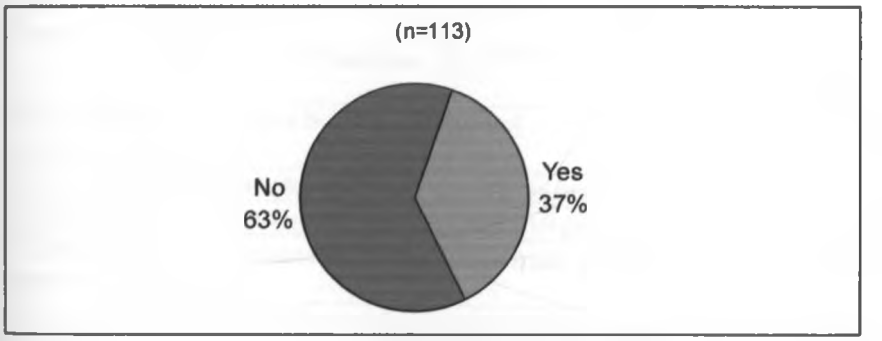

Figure 4. Percentages of clients who felt they required to eat special foods.

Knowledge of key nutritional practices for PWHA

Most clients were knowledgeable on the key nutrition practices to be observed by PWHA. Only 17.1 % felt they had to consume different foods from the other members of the house hold and 40.8% expressed the need to avoid crowded places. Table 6 gives the

percentages of those clients who agreed or disagreed with the nutritional information statements read to them.

Chi square indicated no significant associations between those clients who felt they had to consume different food from others in the household and their clients age, $p>0.05$ ($p=0.532$). Correlation analysis did not reveal any significant relationship either $p>0.05$ ($p=0.337$). Chi square also revealed a significant associations between those clients who felt they should avoid crowded places and their age, $p<0.05$ ($p=0.038$). Correlation analysis also revealed a significant relationship $P<0.05$ ($p=0.038$). Chi square between BMI and knowledge by PWHA that, HIV/AIDS increases the body's nutritional requirements and Increased nutrient intake will help counter infections did not reveal any significant associations $p>0.05$.

Table 6. : Percentages of those agreeing or not agreeing with the statements on nutritional practices by PWHA.

	Key Nutritional Practices for PWHA	Percent% Agreeing	Percent (%) Not agreeing
A	**HIV/AIDS increases the body's nutritional requirements**	**76.3**	**23.7**
B	**Increased nutrient intake will help counter infections**	**76.3**	**23.7**
C	Increased energy consumption will improve energy levels	89.5	10.5
D	**PLWHA have to consume different foods from those in their households**	**17.1**	**82.9**
E	Every time I visit the CCC my weight should be measured	99.3	0.7
F	My drinking water should always be treated (boiled), sterilized	86.8	13.2
G	Foods eaten by PWHA are the same as that of other household members.	87.5	12.5
H	Physical activity is important for PWHA	96.1	3.9
I	I should eat smaller meal portions frequently	86.8	13.2
J	I should drink at least eight glasses of water daily	91.4	8.6
K	I should wash hands before food preparation	100.0	0
L	**I should avoid crowded places**	**40.8**	**59.2**

*Percentages given for those agreeing with the statements

Discussion

The study emphasis was on nutritional knowledge of the key practices of PWHA and their food diversity. Data was generated on the nutrition status of PWHA and their dietary diversity scores.

MOH (2001) report states that in Kenya the AIDS epidemic affects the productive groups and especially those at the peak of their life. Similar results have been reported by Warentho (2005). The results of this showed that the distribution showed that HIV infection among the adult clients cut across all the adult age groups but with a higher concentration among those aged 18 to 42 years.

The findings showed a significant negative association between the nutrition status of PWHA and the IFDD scores. The hypothesis that, "There is no association between nutritional status and diversity in the dietary practices by PWHA" was therefore rejected. There was also no significant associations between key nutritional practices and clients BMI.

Piwoz and Preble (2000) and Daelmans(2005) and Fawzi, Msamanga and Spielgman (2004) have shown importance of dietary adjustments to enhance the survival chances of HIV infected individuals. It was clear that clients had made an effort to adjust their eating habits by changing their dietary patterns after knowing about their disease condition. Most patients were knowledgeable on the key nutrition practices for PWHA. This is probably because the clients understood the need to improve their health in order to

combat their disease condition. Feelings by clients that they had to consume different foods from those consumed by members of the household revealed lack of sufficient nutritional information or blurring of information between knowledge and practice. This meant client maybe had the knowledge but did not practice what they knew.

Dietary diversity and nutritional status

Nutritional status of PWHA was reflected by BMI measurements. Riruta CCC had the lowest prevalence of underweight clients compared to the other two CCC. This was attributed to the ongoing program where supplementary foods were being issued to clients whose BMI scores showed they were severely malnourished.

Dietary diversity has been suggested as a proxy indicator for nutrient adequacy (WFP, 2007). It shows consistent association with dietary adequacy and caloric intake. Results from the IFDD questionnaire showed that most clients diets were not diversified though they had made an effort to modify their diets indicating high levels of knowledge on their disease condition. Lack of diversity could have been affected by clients purchasing powers for food as most were classified as belonging to the low income bracket with earnings of less the KES 10 000 per month (CBS,2005). Warentho (2005) explains that low incomes cannot adequately meet the increased demand of HIV/AIDS disease among the infected persons. Cereals and tubers which are easily available and cost relatively less compared to other foods were the most consumed foods. Very few clients had consumed dark green leafy vegetables which are normally rich in a variety of vitamins (MOH, 2006) despite mentioning them as important foods in managing their conditions.

Oils and fats important in promoting absorption of fat soluble vitamins were also poorly consumed. This could have resulted due to lack of awareness. By virtue of the fact that they lived in the city and food was probably acquired mainly through purchasing, this could have affected their food purchasing capabilities and also ability to diversify their diets. It was noted that clients avoided sugar and sugar products which are empty calorie foods a fact showing awareness of nutrition. Twenty four hour recall of consumed foods is not sufficient to give an adequate indication of an individual's habitual diet.

Results also revealed that BMI was negatively correlated with the IFDD scores. The implications were that a low IFDD score was associated with increase in BMI. This meant that those without diversified food intake were more likely to be overweight. As discussed above most of the clients fell in the low income bracket there was a likely probability that they did not have access to diverse foods leading to more consumption of carbohydrate foods which are relatively cheaper compared to other foods but more likely to contribute to weight addition.

Conclusion

This study concluded that

1. People With HIV/AIDS are knowledgeable about the role of food in relation to their condition as they have made an effort to modify their diets after being diagnosed with the virus.

2. The diets of PWHA are not well diversified despite the efforts they have made to modify their diets to manage their disease condition.

Recommendations

The study recommends,

1. Nutrition information for PWHA should be presented clearly with aim of making them knowledgeable and encouraging them to practice the acquired knowledge.
2. Measures should be put in place to ensure PWHA have access to diversified food intakes maybe through more advocacies of kitchen gardens with diversified vegetables.

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APPENDIX 1; CLIENTS QUESTIONNAIRE

The Nutrition Education Session In The Comprehensive Care Clinics for PWHA. A Study of Nairobi District Clinics in Kenya.

Questionnaire No.....

Dear Client,

I am a postgraduate student, from University Of Nairobi, carrying out research on Nutrition Education for PLWHA offered in the Comprehensive Care clinics. Together with me are two research assistants who are helping me to collect this information, All information and your records obtained in relation to this study will be handled confidentially. Your identity will not be disclosed in any public reports or publication or to any other parties.

You are encouraged to ask any questions that occur to you at any time during your participation. Additional information can be obtained from the principle researcher, Emily Sakwa-Madete on Telephone Number 0726116101. Results of the study will be shared on request.

Yours Sincerely,

Emily Sakwa-Madete.

Name of Interviewer. .....

Date of interview. .....

A. DEMOGRAPHIC AND SOCIO- ECONOMIC INFORMATION

1. Gender 1. Male 2.Female

2. Age

3. BMI measurements

Weight	1st measurement	
	2nd measurement	
	Average	
Height	1st measurement	
	2nd measurement	
	Average	
BMI		

4. Marital Status	5. Education level	6. Occupation	7. What is your average income(KES)	8. Major source of water
Single= 1 Married= 2 Divorced= 3 Widowed=4	None=1 Primary= 2 Secondary=3 Post secondary= 4 University=5	unemployed= 1 Housewife=2 Business=3 Farmer=4 Casual Laborer=5 House help=6 Professional e.g. Teacher, Accountant=7 Others= (specify)	< 1000= 1 1000- 5000= 2 5001- 10,000= 3 10,001-I5,000= 4 15,001-20,000=5 20,001-25,000=6 25,001-30,000=7 >30,0001	Borehole= 1 Piped = 2 Stream/ river= 3 Rain water= 4

9. Approximately how much do you spend on purchasing food per **week?** KES.....

10. What fuel do you use for cooking in your house? (Rank according to the level of usage starting from mostly used to least used)

1= firewood 2= paraffin 3= electricity 4= charcoal 5= gas 6= others (specify)

11. What do you use for lighting in your house? (Rank according to the level of usage starting from mostly used to least used)

1= tin lamp 2= pressure lamp 3= electricity 4= hurricane lamp 5= gas lamp 6= candle 7= others (specify).....

B. Nutrition Education

12. How many times have you visited this CCC since January 2006? .....

13. Did you talk to the Nutrition-Educator during all your visits? 1. Yes..... 2.No .....

14. If your answer to Q.13 is no, give

reasons.....

.....

.....

.....

15. How many times has someone from the CCC talked to you about your diet ever since you started attending the CCC until today? **(tick the correct answer)**

Once=1

Two times=2

Three times=3

Four times=4

Five times=5

More than five times =6 indicate number.....

16. Can you remember the people who talked to you about your diet?

(Put a tick against those who talked to you)

Doctor = 1.....

Nurse = 2.....

Nutrition Educator = 3.....

Other, indicate who.....

17. When they were talking to you, did they use any of these materials?

(Show the counseling cards and other education materials)

Yes =1 ..... No = 2.....

18. Were you given fliers with information on nutrition and diets to take home with you?

Yes = 1..... No = 2.....

19.a) If answer to question 18 is yes, what language were this materials in?

.....

English=1.....Kiswahili=2.....Other .....

b) What language would you prefer to be used on the materials? .....

c) what is your ethnicity?.....

20. Of the materials used ,indicate your degree of liking for each of the listed attributes

(Use the codes provided at the bottom of the table)

	Counseling cards 1	Information sheet	Brochures/Handouts	Others, specify .....
Educative				
Attractive				
Acceptable				
Understood				
Total score				
Rank				

5	4	3	2	1
Like very much	like slightly	cannot decide	dislike slightly	not very

21. What do you feel about the nutrition education offered in the CCC?

(Rate using provided scale)

Very useful process =3.....

Useful process=2

Not a useful process=1

22. List other places you get information about your diet?

A).....

B).....

C).....

23..Please give a rating of the health professionals in this CCC

Professional	Unconcerned =1	Slightly unconcerned =2	Average =3	Concerned =4	Very concerned =5
Doctors					
Nutrition-educators					
Nurses					
Pharmacist					
Receptionist					

SECTION C. KNOWLEDGE TESTING

24. Is your diet different from what you were eating before you became infected with the HIV Virus? Yes=1..... No=2.....

25. If your answer is yes, Give reasons for changing your food intake.

.....

.....

.....

26. List foods you feel are important for your condition .....

27. Are there food you have been asked to eat but you cannot eat them?

Yes =1 ..... No=2.....

28. Why are you not able to eat them(Explain)

Are expensive=1.....

Culturally not acceptable=2.....

Personally dislike =3.....

Religious beliefs=4.....

29. Which of the following statements do you agree with.

(Tick in the appropriate box)

	Agree	Disagree
HIV/AIDS increases the bodies nutritional requirements		
Increased nutrient intake will help counter infections		
Increased energy consumption will improve energy levels		
PLWHA have to consume different foods from those in their households		
Every time I visit the CCC my weight should be measured		
My drinking water should always be treated(boiled, sterilized)		
Foods eaten by PLWHA is the same as that of other household members		
Physical activity is important for PLWHA		
I should eat smaller meal portions frequently		
I should drink at least eight glasses of water daily		
I should wash hands before food preparation		
I should avoid crowded places		

30. Which physical activity(s) do you normally undertake?.....

31. Are you on ARV? Yes=1.....No=2.....

32. If not, indicate what medication you are on.....

APPENDIX 2; INDIVIDUAL DIETARY DIVERSITY QUESTIONNAIRE

(Adapted from FAO/Nutrition and Consumer Protection Division)

Please describe the foods (meals and snacks) that you or anyone else in the household ate yesterday during the day and night, starting with the first food eaten in the morning

[Note for enumerator: excluding foods purchased and eaten outside of the home]

.Question Number	Food group	Examples	YES=1 NO=0
1	CEREALS	Bread, noodles, biscuits, cookies or any other foods made from millet, sorghum, maize, rice, wheat + insert local foods e.g. ugali, nshima, porridge or pastes or other locally available grains	
2	VITAMIN A RICH VEGETABLES AND TUBERS	Pumpkin carrots, squash, or sweet potatoes that are yellow or orange inside + other locally available locally available vitamin; A; rich vegetables	
3	WHITE TUBERS AND ROOTS	White potatoes, white yams, cassava, or foods made from roots	
4	DARK GREEN LEAFY VEGETABLES	Sweet paper, dark green/leafy vegetables including wild ones + locally available vitamin-A rich leaves such as cassava leaves etc.	
5	OTHER VEGETABLES	Other vegetables including wild vegetables	
6	VITAMIN A RICH FRUITS	Ripe mangoes, papayas, other locally available vitamin A-rich fruits	
7	OTHER FRUITS	Other fruits, including wild fruits	
8	MEAT	Beef, pork, lamb, goat, rabbit, wild game, chicken, duck or other birds, liver, kidney, heart, or other organ meats or blood-based foods	
9	EGGS		
10	FISH	Fried or dried fish or shellfish	
11	LEGUMES ,NUTS AND SEEDS	Beans, peas, lentils, nuts, seeds, or foods made from these	
12	MILK AND MILK PRODUCTS	Milk, cheese, yoghurt or other milk products	
13	OIL AND FATS	Oil, fats or butter added to food or used for cooking	
14	SWEETS	Sugar, honey, sweetened soda or sugary foods such as chocolates, sweets or candies	
15	SPICES /ALCOHOLIC BEVERAGES	spices, alcoholic beverages s	
16	COFFEE/TEA	Tea(black, green, herbal) or coffee	
B	Did you eat anything(meal or snack) outside the home		Yes=1 No=2

APPENDIX 3; NUTRITION EDUCATION STAFF QUESTIONNAIRE

NUTRITION-EDUCATOR QUESTIONNAIRE. Questionnaire No. .....

Nutrition Education in the Comprehensive Care Clinics. A Study of Nairobi District.

Dear Nutrition-educator,

I am a postgraduate student at The University Of Nairobi, carrying out research on Nutrition Education for PWHA offered in the Comprehensive Care clinics. Together with me are two research assistants who are helping me to collect this information, All information and your records obtained in relation to this study will be handled confidentially. Your identity will not be disclosed in any public reports or publication or to any other parties.

Assistance from you by filling the following questionnaire fully will be appreciated. Additional information can be obtained from the principal researcher, Emily Sakwa-Madete on Telephone Number 0726116101. Results of the study will be shared on request.

Yours Sincerely.

Emily Sakwa-Madete

Name of Interviewer.....

Date of interview.....

Complete the following questionnaire

SECTION A; PERSONAL INFORMATION

(Tick in the empty boxes and fill answers in provided spaces)

1. Gender Male 1 ☐ Female 2 ☐

2. Please indicate the number of years you have worked as a nutrition-educator.....

3. Have you attended further professional courses in the last three years?

Yes 1 ☐ No 2 ☐

A) If the answer is yes, list the courses

☐ 1 Counseling courses

☐ 2 Nutrition courses

☐ 3 HIV/AIDS courses

☐ 4 Communication strategies

Others, specify.....

4. Were you trained as a nutrition-Educator? Yes=1 ☐ No=2 ☐

5. Please indicate how well you enjoy your job

Really dislike 1	Dislike 2	Neither like nor dislike 3	Like 4	eally like 5

A) What do you like most about your work?.....

.....

B) What do you dislike about your work.....

.....

6. Do you fear becoming infected with some of the opport ic disease presented by clients? Yes 1 ☐ No 2 ☐

SECTION B NUTRITION EDUCATION

7. When do you give nutrition education to your clients in the CCC

☐ 1 Soon after diagnosis

☐ 2 Clients subsequent attendance to clinic

☐ 3 When I feel it is necessary

Other……..

8. Are you able to talk to all your patents when they turn up at the CCC? Yes 1 ☐ 2 ☐

A) Give reasons for your answer……..

……

9. Can you give suggestions on how all your clients can receive nutrition education when they turn up at the CCC……

……

……

……

10. How often should nutrition education be offered to your clients?

……

A) Why……..

11. Are those people affected with AIDS e.g those living with your client eligible for nutrition education Yes=1 ☐ No=2 ☐

A). If yes when do they get the nutrition-education?.....

……

B) If no, why do you think it is not possible for them to get the education?.....

……

12. .Please indicate which of the following views you agree with about your clients.

(tick the views you agree with)

☐ 1 Are aware of the importance of diets to their condition

☐ 2 Are cooperative about information given to them about their diets

☐ 3 Do not care about their condition

☐ 4 Are uncooperative about information given to them about their diets

☐ 5 Do not appreciate the seriousness of their disorder

Others ……

……..

13. How would you generally document the perception of nutrition education by your clients?

☐	☐	☐	☐	☐
1	2	3	4	5
Poor	Fair	Average	Good	Excellent

14. Do you feel the information you offer during the education sessions is sufficient for your clients? Yes 1 ☐ No 2 ☐

A) Give reasons for your answer.....

.....

.....

15. Where do get the nutrition education materials you use during the nutrition education sessions?

☐ 1 From the Ministry of Health

☐ 2 From Non Governmental Organisations

☐ 3 From own sources

☐ 4 From the internet

Others, specify .....

16. What is your opinion on the educational materials available to you, which you use in counseling?.....

.....

.....

17. Can you recall how the nutrition education was conducted before introduction of the nutritional guidelines and the CCC .

18. Kindly rate the education materials you use in terms of usefulness.

Material Description	Usefulness				
	Very useful 1	Useful 2	Averagely useful 3	Not useful 4	Unnecessary 5

19. What strategies would you like to see implemented to improve delivery of nutrition education?.....

.....

.....

.....

20. Do you feel elderly clients are uncomfortable talking to you **(Explain your answer)**.....

21. How do you ensure that those considered nutritionally at risk get supplementary food support if they are not

empowered?.....

.....

22. Please show me the most recent version of The National Nutritional Guidelines which you are using.....

(Record year of publication)

APPENDIX 4; FOCUS GROUP DISCUSSIONS

Nutrition Education in the Comprehensive Care Clinics for PWHA. A study of Nairobi District

Date…….. Time…… Venue……

Name of Facilitator……

Name of research assistants…….. ……

Focus Group Discussion Guide

Introductions and explanation on objectives of the study.

Assure participants on confidentiality of all information given.

-Each participant should get a chance to air their views

-All information is recorded on flipcharts and clarifications made on the points as they are being recorded.

-Discussions should arise from the points recorded.

A) DIETARY INFORMATION

2. In what ways have you benefited from the nutrition education offered.

3. How friendly and helpful do you find the nutrition educators?

Stimulate discussions on foods

4. How do you feel regarding the diet information you have received?

-Are the foods easily available?

-Are they acceptable to you according to your cultural and religious values?

-Do you understand why your diet should be like it has been explained?

5. What do you feel was missing from this information?

6. Did you get this nutrition education all the times you came to the CCC?

7. How were you given information on diets?

-Were you asked which foods you regularly consume?

-Were you simply told what you need to consume without you giving information of what you are able to consume?

8. Were you satisfied with the way the information was given?

B) EDUCATION MATERIALS (Content Analysis)

A) Materials used

-Counseling cards
-Handouts
-Any other materials available

All materials to be assessed using the following steps

a). What can you see in the on the materials
b). How is the print, is it easily legible
c). Is format appealing?
e). Are the colours used attractive
f)). What do you like about the materials?
g). What have you learnt from the materials?
h). What message do you think the material conveys
i). What comments do you have about the materials
j). What can be improved on them

9. Were these materials used during the education session?

10. Were the materials easily understood?

-Did the information and illustrations reflect the Kenyan situation

-Which ones were most useful

11. Did you get any materials to take away with you (hand outs)?

12. What languages were the materials in?

-Which other languages do you feel the materials should be in?

14. Do you feel your family, friends, people at work understand about your condition?

-Are they helpful and supportful.

B) Content analysis of the flipcharts

Debriefing immediately after session by principal researcher and research assistants

Responses to be clarified, using recorded notes, notes should be expanded

APPENDIX 5; OBSERVATION CHECKLIST

The Nutrition Education session In The Comprehensive Care Clinics for PLWHA; A study of the Clinics In Nairobi District.

Hello,

My name is Emily Sakwa-Madete. I am a postgraduate student at The University of Nairobi. I am carrying out research on the education component of the CCC. The clinic has given me permission to carry out the study, and I kindly ask you to participate. I would like to observe you with the nutrition educator. Your participation is important but voluntary. You do not have to be observed if you do not want to. You will not be denied any services if you do not participate. If you agree to participate you are allowed to change your mind any time. I will not write down your name and everything I hear will remain strictly confidential. There are no risks or benefits of participating in the study.

Do I have your permission to continue. Yes ☐ **No** ☐

If yes sign below or make a thumb imprint.

Signed..... **Date**.....

Observation Number ☐

1. CCC.....

2. Name of observer.....

3. Time observation began.....

4. Sex of client Female ☐ Male ☐ Age ☐☐

5. Sex of nutrition educator Female ☐ Male ☐ Age ☐☐

6. Language spoken.....

7	**Did the nutrition educator**	**Yes**	**No**
A	Greet client warmly		
B	Ask about their well being		
C	Ask about their food intake and problems encountered		
D	Carry out nutritional assessment using BMI		
E	Share results of biochemical and clinical analysis with client		
F	Identify nutritional needs		
G	Explain alternative choices to address nutritional needs		
H	Help client set nutritional goals		
I	Help client make informed choices to attain nutritional goals		
J	Explain clearly to the client the choices		
K	Treat client with respect		
L	Ask open ended questions		
M	Encourage client to ask question		
N	Use education materials		
O	Use clients records		
P	Assure client of confidentiality		
Q	Discuss a return visit		

APPENDIX 6;CURRICULUM FOR ENUMERATORS TRAINNING PROGRAM

Objectives: By the end of the training, the enumerators;

1. Should be able to explain the objectives of the study.
2. Should be able to use ethics in research.
3. Should be able to create rapport and handle clients respectfully.
4. Should be to assist clients fill in questionnaire without being obtrusive.
5. Should be able to take weight and height measurements correctly.

MODULE 1

1. Introduction
2. Study Objectives.
3. Aims and purpose of study.
4. Ethics in research.
5. Hawthorne effect.
6. Courtesy bias.
7. Creating rapport with clients.

MODULE 2

1. Coding of questionnaires.
2. Taking weights and heights.
3. Filling in questionnaires.
4. Pre-testing questionnaires.

METHODS OF LEARNING

1. Lecture
2. Discussion
3. Question and answer
4. Role play
5. Demonstration

APPENDIX 7; KARNOFSKY PERFORMANCE SCALE

(Commonly used for assessing terminally ill patients)

Name: _____ Today's Date: _____

100 Normal, no complaints, no evidence of disease

90 Able to carry on normal activity: minor symptoms of disease

80 Normal activity with effort: some symptoms of disease

70 Cares for self: unable to carry on normal activity or active work

60 Requires occasional assistance but is able to care for needs

50 Requires considerable assistance and frequent medical care

40 Disabled: requires special care and assistance

30 Severely disabled: hospitalization is indicated, death not imminent

20 Very sick, hospitalization necessary: active treatment necessary

10 Moribund, fatal sessiones progressing rapidly

APPENDIX 8; RECOMMENDED NUTRITION EDUCATION MATERIALS TO BE USED IN THE CCC.

List of recommended nutrition education materials to support nutrition education at the CCC

1. Nutritional counselling cards for PWHA
2. Information sheets on diet-drug interactions
3. Information sheet on food and nutrition problems for PWHA
4. Kenyan Nutrition guidelines for PWHA

RESEARCH PERMIT AND LETTERS OF AUTHORISATION TO CARRY OUT STUDY IN THE NAIROBI CCC

Research Permit No. MOST 13/001/37C 469

Date of issue 27.7.2007

Fee received SHS.500.00

THIS IS TO CERTIFY THAT:

Prof./Dr./Mr./Mrs./Miss MADETE EMILY SAKWA

of (Address) UNIVERSITY OF NAIROBI P.O.BOX 30197 NAIROBI

has been permitted to conduct research in

Location, NAIROBI District, NAIROBI Province

on the topic EFFICACY OF [illegible] EDUCATION IN THE COMPREHENSIVE CARE CLINICS FOR PEOPLE LIVING WITH HIV/AIDS: A STUDY OF NAIROBI DISTRICT CLINICS, KENYA

for a period ending 31ST DECEMBER, 20 07

FOR PERMANENT SECRETARY MINISTRY OF EDUCATION SCIENCE AND TECHNOLOGY

[illegible]ETARY
[illegible]ATION
SCIENCE AND TECHNOLOGY

M. O. ONDIEKI

Applicant's Signature

FOR *Permanent Secretary Ministry of Science and Technology*

CONDITIONS

1. You must report to the District Commissioner and the District Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit.
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2)/four(4) bound copies of your final report for Kenyans and non-Kenyans respectively.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

RESEARCH CLEARANCE PERMIT

K 6055—3m—10/2003

(CONDITIONS—*see* back page)

MINISTRY OF HEALTH

Kenyatta National Hospital Grounds
Telephone: NAIROBI 729502/49
Fax: 710518
Email: headnascop@aidskenya.org
Ref: NASCOP/Nutrition/2007

AIDS/TB/LEPROSY DIVISION
P.O. BOX 19361
NAIROBI

Monday, July 30, 2007

The Provincial Medical Officer of Health,
Nairobi Province.

Dear Dr. Achola

RE: **REQUEST BY UNIVERSITY OF NAIROBI MASTERS STUDENT TO COLLECT DATA IN COMPREHENSIVE CARE CLINICS IN YOUR PROVINCES.**

Emily Sakwa – Madete is a Masters of Science Student in Nairobi University, Department of Food Science, and Nutrition & Technology She is currently undertaking a study entitled "Efficacy of Nutrition Education in the Comprehensive Care clinics for People living with HIV/AIDS in Nairobi." She has approval from the Ministry of Education Research unit; please accord her the assistance she requires to collect data in our CCC's among our health Care service providers.

Attached find a list of sites she intends to visit.

Yours faithfully,

Dr. I. Mohammed
HEAD NASCOP

CC:
PASCO
Nairobi,
DASCOS
Nairobi,

DISTRICT MEDICAL OFFICER OF HEALTH
NAIROBI HEALTH BOARD
P.O. BOX 48651 00100, NAIROBI
15/8/07

DISTRICT MEDICAL OFFICER OF HEALTH
NAIROBI HEALTH BOARD
P. O. BOX 48651 00100, NAIROBI

Noted 1/8/07
copy to
N/West
N/North
N/East
report to DMOHs

CITY COUNCIL OF NAIROBI
PUBLIC HEALH DEPARTMENT
UMWANI KAMKUNJI DISTRICT

Dr. Nuru
PASCO
for PMO

Provincial Medical Officer
NAIROBI

COMPREHENSIVE CARE CLINICS TO BE SAMPLED:

The Comprehensive Care Clinics (CCC) to be sampled are in the following districts;

- Nairobi Central – Rhodes /Ngara CCC
- Dagoretti – Riruta CCC
- Pumwani – Pumwani CCC
- Makadara – Makadara CCC

A total of 152 clients living with HIV/AIDS will be interviewed; Nutrition educators providing nutrition education in the CCC will also form part of the study. Of interest also are the materials used in the counselling process. An integral part of study is the observation of the counselling process. Official government permission from the Ministry of Education has already been sought. In case the selected CCC do not yield sufficient sample size more CCC will be selected from the same divisions.

REPUBLIC OF KENYA

MINISTRY OF SCIENCE & TECHNOLOGY

Telegrams: "SCIENCE TEC", Nairobi
Telephone: 02-318581
E-Mail:ps@scienceandtechnology.go.ke

JOGOO HOUSE "B"
HARAMBEE AVENUE,
P.O. Box 9583-00200
NAIROBI

When Replying please quote
Ref. MOST 13/001/ 37C 469/2

27th July 2007

Emily Madete Sakwa
University of Nairobi
P.O. Box 30197
NAIROBI

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on, ***'Efficacy of Nutrition Education in the Comprehensive Care Clinics for People living with HIV/AIDS: A Study of Nairobi District Clinics, Kenya'***

I am pleased to inform you that you have been authorized to carry out research in Nairobi Clinics for a period ending 31st December 2007.

You are advised to report to the Provincial Commissioner, the Provincial Director of Education and Provincial Medical Officer of Health Nairobi before embarking on your research project.

On completion of your research, you are expected to submit two copies of your research report to this office.

M. O. ONDIEKI
FOR: PERMANENT SECRETARY

Copy to:
The Provincial Commissioner
Nairobi

The Provincial Director of Education
Nairobi

Provincial Medical Officer of Health
Nairobi

CENTRAL HEALTH DISTRICT
S.T.C CASINO

TO –Facility I/c

1. Ngaira H/c
2. Rhodes clinic

-MOH-PUMWANI

REF: Research student- **EMMILY SAKWA**
The bearer of this letter is carrying out a study on nutrition in CCC's.
Your facility has been identified as site where she will collect the necessary information.
Kindly accord her the necessary assistance.
Yours faithfully

Dr. Kathure A.
NAIROBI CITY COUNCIL
SPECIAL TREATMENT AND SKIN CLINIC
P. O. Box 30108
NAIROBI
DMOH CENTRAL

CITY COUNCIL OF NAIROBI
PUBLIC HEALH DEPARTMENT
UMWANI KAMKUNJI DISTRICT

UNIVERSITY OF NAIROBI

COLLEGE OF AGRICULTURE AND VETERINARY SCIENCES

DEPARTMENT OF FOOD SCIENCE, NUTRITION & TECHNOLOGY

APPLIED NUTRITION PROGRAMME (ANP)

P.o. Box 442 - 00605 Uthiru
Nairobi – Kenya
East Africa

Tel: 254-20-631339/40/41/53
or 632211/12

18th July 2007

The Director,
NASCOP

Ref: Introducing Ms. Emily Sakwa-Madete

The above named is a second year Master of Science student (registration no. A56/p/7900/2006) in Human Nutrition, at the University of Nairobi, Department of Food Science, Nutrition and Technology.

Ms. Sakwa-Madete is in the process of collecting data for her MSc. dissertation entitled **'Efficacy of Nutrition Education in the Comprehensive Care Clinics for People Living with HIV and AIDS in Nairobi'**

Please give her the necessary assistance.

Thank you.

Yours sincerely,

Dr. Alice Mboganie Mwangi
Applied Nutrition Programme
University of Nairobi
Kenya

UNIVERSITY OF NAIROBI

COLLEGE OF AGRICULTURE AND VETERINARY SCIENCES
DEPARTMENT OF FOOD SCIENCE, NUTRITION AND TECHNOLOGY
P.O. BOX 29053, KANGEMI, NAIROBI
Tel: 630172, 631353/50/48- Ext: 27093: E-mail: *dftn@uonbi.ac.ke*

18th July 2007

TO WHOM IT MAY CONCERN

RE: MADETE EMILY SAKWA

This is to confirm that the above named is an M.Sc. Applied Human Nutrition student in the Department of Food Science, Nutrition and Technology. She has completed first year coursework consisting of lectures, field work, practicals and exams. She is now ready to embark on research work.

Any assistance given to her will be highly appreciated.

CHAIRMAN
DEPT. OF FOOD SCIENCE, NUTRITION & TECHNOLOGY

DEPT. OF FOOD SCIENCE, NUTRITION & TECHNOLOGY

Prof. M.W. Okoth
Chairman,
Department of Food Science,
Nutrition & Technology

MWO/ckn