

**THE PREPAREDNESS OF NATIONAL SECONDARY SCHOOL  
TEACHERS IN NAIROBI PROVINCE TO IMPLEMENT  
HIV/AIDS EDUCATION CURRICULUM**

UNIVERSITY OF NAIROBI  
CA8T AFRICANA COLLECTION

*BY*

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**DECLARATION**

**This research project is my original work and has not been presented for a degree award in any other university.**

ROBERT N. OUKO

**This research project has been submitted for examination with my approval as**

**University Supervisor**

A handwritten signature in black ink, appearing to read 'Grace Nyagah', written over a horizontal line.

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Lastly I do give thanks to our good God without whom nothing good can be done. May His name be exalted forever Amen.

## **DEDICATION**

This work is dedicated to two categories of people:

1. All my family members and friends.
2. All people infected and/or affected with HIV/AIDS.

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**LIST OF ABBRIVIATIONS**

- AI: Artificial Insemination
- AIDS: Acquired Immune Deficiency Syndrome
- AMREF: African Medical Research Foundation
- ARC: AIDS related complex
- B.Ed: Bachelor of Education
- CAEV: Caprine Arthritis Encephalitis virus
- CDC: Center for Disease Control
- CFBT: Center for British Teachers
- DNA: Deoxyribonucleic Acid
- EIAV: Equine Infections Anaemia Virus
- ELISA: Enzyme Linked Immunosorbent Assay
- ESR: Erythrocyte sedimentation rate
- GIIC: Geography, History and Civics
- HIV: Human Immunodeficiency Virus
- HTLV: Human T-lymphotropic virus
- KCPE: Kenya Certificate of Primary Education
- KCSE: Kenya Certificate of Secondary Education
- KIE: Kenya Institute of Education
- KNEC: Kenya National Examination Council
- LAV: Lymphadenopathy Associated Virus
- M.Ed.: Master in Education
- NGOs: Non-Governmental Organisations
- NSS: National Secondary Schools

PCP: *Pneumonia carinii* Pneumonia

PGDE: Postgraduate Diploma in Education

PGL: Persistence generalised lymphadenopathy

PLWAIDS: People Living With AIDS

PLWHIV: Persons Living with HIV

RE: Religious Education

RNA: Ribonucleic Acid

SEE: Social Education and Ethics

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SIV: Simian immunodeficiency virus

STDs: Sexually Transmitted Diseases

STIs: Sexually Transmitted Infections

TSC: Teachers Service Commission

UNICEF: United Nations International Children Education Fund

UT: Untrained Teacher

VCT: Voluntary Counselling and Testing

WHO: World Health Organisation

## ABSTRACT

This study was carried out to investigate the preparedness of 119 HIV/AIDS 'carrier subject' teachers from National Secondary Schools in Nairobi province to implement the HIV/AIDS Education curriculum. The study mainly investigates their HIV/AIDS knowledge level and attitude towards HIV/AIDS Education. It further investigates whether the subjects the teacher are teaching, gender, religious affiliation and the number of HIV/AIDS in-service training courses attended influence the teachers' HIV/AIDS level of knowledge and their attitude towards HIV/AIDS Education. The teachers' access to HIV/AIDS teaching/learning resources and the problems faced in the implementation of HIV/AIDS Education curriculum are also investigated.

The teachers' research questionnaire in appendix A was used to obtain the required data. Seventy-eight teachers responded. Eighteen of these were male while 60 were female. The data obtained was coded before it was analysed using SPSS. Pearson's Product-Moment Correlation Coefficient, One-Way ANOVA test and I - test were used to test the research hypotheses at .05 level of significance.

Knowledge on HIV/AIDS was found to be generally high with the respondents scoring a mean score of 77.8% in the knowledge test. On average the respondents had a moderately positive attitude towards HIV/AIDS Education, Social Education and Ethics, Biology, Geography and Religious Education subject teachers had the necessary knowledge and attitudes to qualify these subjects as the most suitable HIV/AIDS Education carrier subjects.

A significant relationship existed between HIV/AIDS level of knowledge and the attitude towards HIV/AIDS Education. The study also revealed that there

was a significant difference in the HIV/AIDS level of knowledge of teachers who were teaching the different HIV/AIDS carrier subjects. There was however no significant difference in the attitudes towards HIV/AIDS Education of teachers teaching the different HIV/AIDS carrier subjects,

There was no significant relationship between the HIV/AIDS level of knowledge and the teachers' gender, religious affiliation and the number of in-service courses attended. There was also no significant relationship between the teachers' attitude towards HIV/AIDS Education and gender, religious affiliation and the number of in-service courses the teachers had attended.

Findings from this study led to a conclusion that the HIV/AIDS carrier subject teachers are generally well knowledgeable on HIV/AIDS issues. They also have the necessary attitude towards HIV/AIDS Education. The teachers however need to be trained adequately on the use of integration and infusion method in the teaching of HIV/AIDS Education.

The study made the following recommendations:

- 1) All HIV/AIDS carrier subject teachers should be given meaningful training on the use of integration and infusion method in the teaching of HIV/AIDS Education.
- 2) The government should provide funds in its yearly financial budget, which will be used to purchase HIV/AIDS learning/teaching materials since many teachers do not have access to these materials,
- 3) Kenya Institute of Education (KIE) should liaise with book publishers to ensure that HIV/AIDS Education textbooks are well synchronised with the syllabus,



Social Education and Ethics (SEE), which is currently being phased out should be retained in the curriculum and be made compulsory in form I and 2. This is because many teachers named it as the most appropriate HIV/AIDS Education carrier subject. Furthermore SEE teachers had the most positive attitude towards HIV/AIDS Education.

## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

In the recent years there has been an explosion of knowledge. This has brought about difficulty in selection and organisation of content that goes to the formal Curriculum. "A survey of recent school curricula reveals that little or no serious attention is paid to organisation and design. Fashion exerts a disproportionate influence on curriculum" (Shiundu & Omulando, 1992, p. 116). Emerging issues such as Sex Education, Environmental Education and HIV/AIDS Education are being added to the formal curriculum of many countries to make it more pertinent to the prevailing situation. In many instances such moves have proved to be injurious rather than being beneficial to the development of education (Shiundu & Omulando, 1992; Silin, 1997).

Lack of proper organisation and design coupled with ill preparedness on the part of the implementers has in most case led to some subjects being a 'null curriculum'. As McCutcheon (1997) puts it,

A null curriculum constitutes what students do not have an opportunity to learn under the auspices of schools. The null curriculum is virtually infinite, some aspects are consciously decided upon when school people deliberately elect not to include a particular matter in the curriculum due to its controversial nature, a lack of proper equipment or time or other reasons (p. 189).

HIV/AIDS Education and Sex Education Curriculum are perhaps some of the subjects that are likely to become null curricula in schools.

HIV/AIDS Education Curriculum is a contemporary issue which just like Sex Education Curriculum has generated considerable debate about its introduction and implementation in the school system (McCutcheon, 1997). Some people may be supporting its introduction; others may be opposing it while others may be indifferent to its introduction. Teachers may also be falling in any of these three categories. The current intensity of HIV/AIDS scourge coupled with its grave consequences has however forced many governments to introduce HIV/AIDS Education Curriculum regardless of the existence of support or opposition to its introduction.

Acquired Immune Deficiency Syndrome (AIDS) by itself may not have attracted much attention were it not for its main mode of transmission (sexual transmission) and its incurable status, which makes it hard for health officers to have absolute control over it. The fact that HIV/AIDS is incurable and that it can be prevented through safe and responsible behaviour has made most leaders to believe that HIV/AIDS Education is the only available option that can be utilised to decrease the alarming rate at which HIV is currently spreading. Silin (1997) notes the following about the need for HIV/AIDS Education:

AIDS makes no sense. However the continuing proliferation of HIV/AIDS curricula speak to our very real desire to claim epistemological rationality and epidemiological certainty in a world plagued by a new and as yet incurable disease (p. 224).

Initially, HIV/AIDS seemed to be confined to marginal risk groups of "prostitutes", homosexuals and intravenous drug users. It is currently however a threat to all categories of people (Dofour, 1990; Silin, 1997). The youth especially

those who are sexually active are at the highest risk of being infected with HIV (KIE, 1997a; KIE, 1997b; UNAIDS/The Panos Institute, 2001).

Youth in developing countries especially those aged between 15 and 25 are increasingly being infected with HIV. Approximately 60 % of the world's HIV infections are found in young people under the age of 25 years (UNAIDS/the Panos Institute, 2001). Most of these youth "do not know they carry the virus. Many millions more know nothing or too little about HIV to protect themselves against it" (UNAIDS/WHO, 2001a, p. 3). These youth and the rest of the population urgently need to be educated on matters pertaining HIV/AIDS in order to protect themselves against HIV infection,

HIV/AIDS Education is undeniably the foremost and topmost weapon that can be used to fight the HIV/AIDS pandemic. HIV/AIDS Education may however prove to be ineffective if it emphasises only on delivery of 'facts' on HIV/AIDS. About this Panos Dossier Institute (1988) claims,

By itself information increases knowledge but does not change behaviour. In several countries governments have run multi-media mass alert campaigns on AIDS. The results! People know more about AIDS and how the virus is transmitted but this in itself seems to have little influence on their behaviour (pp. 56-57).

The government of Kenya like many other governments has recognised the seriousness of the AIDS scourge amongst the youth who are increasingly being infected with HIV. It has consequently responded by putting in place a plan aimed at reducing incidences of HIV amongst the youth. One of the ways the government of Kenya has planned to use to protect young people against HIV is the

strengthening of the capacity of teachers, parents, leaders and the community in general to enable them educate young people about HIV/AIDS and provide role models for the youth (Republic of Kenya, 1997). Teachers undoubtedly have a greater role than any other intended HIV/AIDS instructors. This is mainly because the society seems to have handed over school going youth to the teachers and school administrators as the main instructors on matters pertaining Sex Education (Meier, 1994) and lately HIV/AIDS. A principal question that comes up at this point is "are the teachers prepared to shoulder this responsibility?"

In the earlier years of HIV/AIDS discovery, educators in many countries did not perceive the vital role they would play in the control of HIV/AIDS. Silin (1997) says the following about the response of educators in the USA towards HIV/AIDS during the earlier years of its discovery:

At first, school administrators perceived HIV/AIDS primarily as a policy problem requiring the attention of legal and public health experts to assess the feasibility of excluding students and staff with HIV. But as the crisis over the presence of people with HIV/AIDS in schools abated, and awareness that HIV/AIDS was not confined to marginal risk groups grew, educators turned towards their pedagogical function. The process was hastened as more and more States mandated K-12 AIDS Education (p. 224).

Silin (1997) however notes that the process of implementing the K-12 AIDS Education curriculum was largely ineffective in the early years of its initiation. He singles out ill preparedness on the part of the teachers and lack of adequately prepared teaching materials as two main contributors to this ineffectiveness.

HIV/AIDS cases have been increasing at an alarming rate in Kenya ("Message on AIDS," 2001; "Let's focus on AIDS," 2001). Since the first HIV/AIDS case was diagnosed in Kenya in 1984, many people have been infected. This has led to the government declaring AIDS a national disaster. About this declaration, the Daily Nation Editor notes that "Kenya may have declared AIDS a national disaster, but there are still indications that we are not moving fast enough to mobilise support for those living with HIV/AIDS and heading off new infections" ("Message on AIDS," 2001 p. 6). This statement reflects lack of serious commitment on the part of all the stakeholders.

Teachers are part of those expected to play an important part in reversing the current trends of HIV infections through their involvement in the implementation of the formal HIV/AIDS Education curriculum. They are expected to educate the school going population about HIV/AIDS through integration and infusion of the HIV/AIDS Education information. Main carrier subject teachers (teachers who teach science. Geography History and Civics (GHC), Home science, Religious Education, Biology, Geography and Social Education and Ethics) are expected to play a significant role in the implementation of HIV/AIDS Education curriculum (K.I.E, 1997b). There are many factors that are likely to influence the extent to which the main carrier subject teachers will successfully perform their role in the implementation of this new curriculum innovation.

Goodlad (1970) had the following to say about factors that may influence the success of any educational programme:

The success of an educational program is dependent on several factors: social attitudes towards education, adequacy of facilities, sufficiency of

materials and equipment, qualification of teachers, method of instruction, attitude of youngsters, and appropriateness of the subject matter. Each aspect in its own way is crucial to the learning process (p. 250).

An interaction between all the above-mentioned factors may be too complex to allow for a single adequate prescription on how any given curriculum innovation or change such as the newly introduced HIV/AIDS Education can be effected.

A number of questions are to be addressed adequately if formal education has to be an effective tool in the fight against HIV/AIDS. These include the following: who is to be educated? What content should be given to this learner and at what stage/period in life? Who is likely to be the best educator? and, what qualifications and preparations should the HIV/AIDS educator have? As educators struggle to find appropriate responses to these questions, they are expected to urgently intervene by implementing the new HIV/AIDS Education curriculum.

Ironically, the probable educators (teachers) may also be infected and/or affected by HIV/AIDS. Statistics has revealed that Kenya loses 6750 teachers a year to AIDS ("Let's focus on AIDS," 2001). This is quite an alarming figure. The fact that the teachers may be infected and/or affected with the HIV/AIDS scourge may influence their preparedness to implement the HIV/AIDS Education curriculum. The preparedness of teachers to implement HIV/AIDS Education Curriculum will certainly determine the extent to which its implementation will be successful.

## 1.2 Statement of the Problem

In the past one-decade, HIV/AIDS cases have been on an increase in Kenya. An estimated 2.5 million Kenyans are living with HIV 700 of whom die daily from HIV/AIDS related illnesses (Redfern 2002, July 3). Populations that were initially thought to be less vulnerable are increasingly being infected with HIV. The school aged youth population is one such population. In Kenya about 14% of youth aged 10 to 24 are infected with HIV ("Let's focus on AIDS," 2001). Some of these are students in secondary schools. The teachers are also equally affected. About 18 teachers die daily due to AIDS (Aduda, 2001, August 29).

Many students do not have adequate information on HIV/AIDS and harbour misconception about the disease (UNAIDS, 2002, July). This may be one of the reasons why they are increasingly being vulnerable to HIV infections. They therefore need to be supplied with the necessary information on HIV/AIDS.

Schools have been seen as the most convenient venue through which HIV/AIDS Education can be taught in a bid to reduce HIV infection rate among the youth. The work of teaching the HIV/AIDS Education curriculum has almost entirely been delegated to teachers who are expected to equip the learners with skills knowledge and attitudes necessary for them to live a life "free of HIV/AIDS infection" (KIE, 1997a p. 66).

Though HIV/AIDS curriculum is a relatively new innovation in Kenya's formal education system, it needs to be implemented effectively right from the initial stages due to the seriousness of the HIV/AIDS pandemic. Studies from various countries have attributed the success of HIV/AIDS Education to proper teaching of comprehensive HIV/AIDS curricula (UNAIDS, 2002, July). Countries



in which such success has been apparent include Canada, France and Sweden. Kenya can learn from the experiences of these countries that proper teaching is vital for the success of any new innovation.

Teachers must be well prepared if there has to be proper teaching of the HIV/AIDS curriculum. The process of implementing the relatively new HIV/AIDS Education curriculum needed to be studied with the aim of assessing the ability and willingness of secondary school teachers to implement the HIV/AIDS curriculum. This was the main focus of this study.

### **1.3 Purpose of the Study**

The purpose of this study was to investigate the teachers' level of knowledge on issues relating to HIV/AIDS and their attitudes towards the HIV/AIDS Education. In a nutshell the study intended to assess the teachers' preparedness to teach HIV/AIDS Education by infusion and integration,

### **1.4 Research Objectives**

This study was intended to achieve the following objectives:

1. To establish the extent to which HIV/AIDS Education Carrier subject teachers were knowledgeable on HIV/AIDS matters,
2. To establish the Carrier subject teachers' attitude towards the HIV/AIDS Education.
3. To determine the most suitable subject(s) for the teaching of HIV/AIDS Education in secondary schools.

4. To determine whether HIV/AIDS in-service training equips the teachers with knowledge and attitudes necessary for the teaching of HIV/AIDS Education.
5. To determine the relationship between the teachers' attitudes towards HIV/AIDS Education and their gender and religious affiliations,
6. To identify problems that may be a barrier to the effective implementation of HIV/AIDS Education.

### **1.5 Research Hypotheses**

With the above research objectives in mind, the following were the hypotheses of this research study: -

1. There is no significant relationship between the teachers' HIV/AIDS level of knowledge and their attitude towards HIV/AIDS Education.
2. There is no significant difference in the HIV/AIDS level of knowledge of teachers who are teaching the different HIV/AIDS carrier subjects,
3. There is no significant difference in the attitudes towards HIV/AIDS Education of teachers who are teaching the different HIV/AIDS carrier subjects.
4. There is no significant difference between male and female teachers' HIV/AIDS level of knowledge.
5. There is no significant difference between male and female teachers' attitudes towards HIV/AIDS Education.
6. There is no significant relationship between the teachers' HIV/AIDS level of knowledge and the number of HIV/AIDS in-service training courses attended.

7. There is no significant relationship between the teachers' attitude towards HIV/AIDS Education and the number of HIV/AIDS in-service training courses attended.
8. There is no significant difference in the HIV/AIDS level of knowledge of teachers with different religious affiliations,
9. There is no significant difference in the attitudes towards **HIV/AIDS** Education of teachers with different religious affiliations,

#### 1.6 **Significance of the Study**

The initial objective of introducing HIV/AIDS Education into the secondary school curriculum was to equip the youth with the knowledge, skills and attitudes necessary to avoid contracting HIV (KIE 1997a; KIE, 1997b). It was necessary to assess how well the actual educators were prepared to implement the HIV/AIDS curriculum so as to achieve this objective effectively.

This study intended to unearth the strengths and weakness among the educator concerning the implementation of this curriculum. It also intended to expose possible difficulties that are making the process of implementing the HIV/AIDS Education curriculum ineffective. Information obtained from this study has formed a basis on which recommendations have been made to policy makers, curriculum developers and the teachers so as to avoid a situation that might lead to the HIV/AIDS Education curriculum becoming a null curriculum.

Any delay in implementation of the HIV/AIDS Education curriculum could have dire consequences. Its immediate implementation was and is still the only viable option to reversing the rate of HIV infection among the school going

population. Its implementation could however have a positive or a negative impact on the rate of spread of HIV. It therefore needs to be done consciously to avoid a negative impact, which may come as a result of improper delivery of the HIV/AIDS content. Assessing the prevailing status of 'main carrier' subject teachers concerning HIV/AIDS Education could help to put in place necessary corrective mechanisms. Taking it for granted that the concerned teachers are able to effectively implement the HIV/AIDS Education curriculum is a costly fault.

### **1.7 Limitations of the Study**

This study had two main limitations. First, HIV/AIDS Education curriculum was a relatively new innovation. Many teachers had not interacted with it fully to know what it entailed. Some of their responses could therefore have been out of ignorance on HIV/AIDS Education Curriculum.

Secondly, in the sampling procedures, it was not possible to take a 'fair' sample from those teaching the existing 'main carrier' subject combinations. This was because some teachers were teaching more than one main carrier subjects. Good examples here were those teachers teaching subject combinations as Geography/Biology, Social Education and Ethics (SEE)/Religious Education (RE) and Home Science/Biology. Because of this and other reasons mentioned in section 3.4 a decision of issuing out questionnaires to the entire population was adopted.

### **1.8 Delimitations of the Study**

The researcher delimited the study in three main ways. First, the preparedness of parents, learners, education administrators and other stakeholders to

take part in the implementation of HIV/AIDS Education curriculum needed to be studied. This study however opted to study the preparedness of teachers only.

Secondly, AIDS Education is supposed to be taught in primary schools, secondary schools and tertiary institutions (K.I.E. 1999). A study on preparedness of educators teaching at all these three levels was vital. This study however opted to concentrate on the preparedness of National Secondary School teachers in Nairobi Province only. Lastly, the study targeted only those teachers teaching 'main carrier' subjects although there were other subjects and co-curricular activities through which AIDS Education could be taught.

### **1.9 Basic Assumptions Underlying the Study**

Some of the items involved in HIV/AIDS questionnaires are inevitably sensitive (Panos Dossier Institute, 1988). One major assumption of this study was that although some of the questions in the teachers' questionnaire may have been embarrassing to some teachers, all teachers involved in the study freely and willingly responded to such questionnaire items without prejudice and with honesty.

The study also assumed that the interaction between National Secondary School teachers and their students who performed relatively above average in Kenya Certificate of Primary Education (K.C.P.E) as compared to their counterparts in other categories of schools would not create in the teachers a unique perception towards HIV/AIDS. Lastly, the study assumed that all the teachers selected for the study were actually teaching the HIV/AIDS carrier subjects that were used to select them.

### **1.10 Definition of Significant Terms**

**AIDS** is an acronym for Acquired Immune Deficiency Syndrome, the ultimate result of infection with a human immunodeficiency virus (HIV) (Crystal, 1995).

**Human Immunodeficiency Virus (HIV)** is a retrovirus that can cause a breakdown of the human immune system known as Acquired Immune Deficiency Syndrome (AIDS) (Crystal, 1995).

**HIV/AIDS Education Curriculum** is a curriculum, which addresses issues that relate to the HIV/AIDS condition.

**HIV/AIDS 'Main Carrier' Subjects** are those subjects that render themselves more suitable than others for the teaching of HIV/AIDS Education content (KIE, 1997b).

**HIV/AIDS 'Main Carrier' Subject Teachers** are all the teachers who teach at least one HIV/AIDS 'main carrier' subject in schools.

**Infusion** of HIV/AIDS Education Curriculum means teaching of the AIDS message at appropriate points (plug in points) when the main subjects are being taught (KIE, 1997b).

**Implementation** means the actual process of making a curriculum real by ensuring that its ultimate clients who are the learners interact with it as was intended.

**Integration** of HIV/AIDS Education refers to the inclusion of AIDS messages into co-curricula and any other activities in and out of school (KIE 1997b).

**National Secondary School** are all those schools that have been set apart by the government to admit learners from all regions in Kenya,

Preparedness is used in this study to mean the ability and willingness (readiness) of teachers to implement HIV/AIDS Education curriculum by infusion and

integration. A teacher who is prepared has adequate knowledge on HIV/AIDS issues and a positive attitude towards HIV/AIDS Education,

SI stands for secondary school teacher grade one.

### **1.11 Organisation of the Study**

The report of this research study is organised into five main chapters. Chapter One is an introduction part, which has the background to the study, the statement of the problem, the purpose, the objectives, the hypotheses, the significance, limitations and delimitations of the study. Assumptions underlying the study and definitions of significant terms are also given here,

Chapter Two has the literature review which attempts to give the context and content of HIV/AIDS Education Curriculum. Some of the details given in this chapter form the theory on which the conceptual framework of the study is based and the foundation on which some of the questionnaire items are based.

Chapter Three outlines the research methodology, which guided the actual data collection and data analysis processes. Chapter Four has a detailed description of the research findings. Tables are used to summarise some of the information. The last chapter has a summary of the research findings, conclusions and recommendations.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.1 Introduction

With formal education in place, the demand of qualified teachers has continued rising proportionately with the number of learners enrolling in learning institutions. Many people are increasingly recognising teaching as a profession that requires thorough preparation for effective performance of the duties therein (Farrant, 1993; Shindu & Omulando, 1992). The demand made on the members of the teaching profession has grown in magnitude especially during this era of rapid changes in the society, which have necessitated regular curricula changes and innovations.

The task of implementation of the curricula is seen largely as the legitimate role of the teachers who with or without choice are expected to take part in the instructional process. "Since it is teachers who instruct, they all have to participate in implementation; they have no choice" (Shiundu & Omulando, 1992, p. 224).

HIV/AIDS Education Curriculum is a recent innovation in the curriculum in which all teachers are expected to take part in its implementation by infusing it into their teaching subjects and integrating it with co-curricula and other activities (KIE, 1997a; KIE, 1997b). A prime question that needs a response here is: are the teachers well prepared for this? This chapter attempts to give the context and content which will form a basis for a response to this question. It also gives information upon which the conceptual framework and on which some of the questionnaire items are based. A broad spectrum of issues on HIV/AIDS and the AIDS Education curriculum are covered in this chapter.



## **2.2 Teacher Education and Curriculum Innovations**

Formal education has led to a situation whereby learners spend a great portion of their time in schools. The instructional role, which traditionally belonged to parents and other community members, has apparently been shifted to teachers. The teachers are expected to be educators (Doll, 1992; Farrant, 1993; Shiundu & Omulando, 1992), counsellors (Bach, 1978) and role models (Dembo, 1977; Mubley, 1990). To become all these, these teachers need to have special qualities attributed to their title.

As educators, teachers are entrusted with the role of availing the curriculum to the intended learners through the instructional process. They are supposed to plan the instructional process and conduct it effectively and efficiently so as to enhance the realisation of the desired outcome. While preparing for a lesson, teachers should take care to avoid incomplete subject matter, incorrect facts and lack of necessary details and necessary illustrative material. They should also avoid disorderly presentation of information if the instructional process has to be effective and efficient (Farrant, 1993).

As counsellors, teachers are expected to guide the learners through all the difficulties they encounter in their academic, social and spiritual life. Many parents have transferred a greater part of the counselling responsibility to the teacher. Concerning this Bach (1978) says that parents are exceedingly putting the counselling burden on the teachers. The parents expect the teachers to counsel the learners on various educational and non-educational aspects. The magnitude of the demand for teachers to counsel the learners has made it inevitable for them to be

active in counselling without it having been their intention to become active towards this direction.

As role models, teachers are expected to live what they advocate for. This is the most important reinforcement especially in matters concerning virtue and morals that the teacher expects the learners to attain (Dembo, 1977; Hubley, 1990), Dembo (1977) notes the following about the influence of the teachers' conduct on the learners' character development:

Students continually react to the attitudes, values, and personalities of their teachers. Imitation of the teachers is a common method of learning. ... If students perceive discrepancies between what the teacher preaches and what she practices, they will ignore the sermon and follow the practice (p.1 10).

To perform the three aforementioned roles effectively, the teachers need to be equipped with the necessary skills, knowledge and attitudes. This is presumably done through pre-service and in-service teacher education/training, which are vital for effective implementation of any given curriculum. About this Hawes (1979) argues,

There is no conceivable way in which curriculum implementation can be divorced from the process of teacher education. The teacher in school interprets the objectives and content in the curriculum plan and manages the learning situations through which intention is transformed into actual practise (p. 121).

Farrant (1993) adds that wrong were those "people who argued that teachers did not need training; that what they learned on the job was of greater value than anything taught in college" (p. 227). Other authors (Dove, 1986; Flanders, 1970; \*

Hawes, 1979; Majasan, 1995) also recognise the importance of equipping teachers with the knowledge, skills and attitudes needed for the implementation of any given educational programme. This is especially vital for the success of new programmes since such programmes

involve acquiring new knowledge and attitudes to learning including a degree of flexibility often uncomfortable to an insecure teacher and foreign to an authoritarian culture, more work and more thinking for every body and thinking in its self is hard work (Hawes, 1979, p. 119)

Hawes (1979) recognises the importance of in-service training in the implementation of new curricula when he says, "the tried and trusted way of introducing new curricula is by a series of specially organised courses for teachers" (p. 123). Such in-service courses, which may be long or short, offer help in improving the teachers' specific teaching skills and enable them to come to grips with new developments such as new curricula, new methods and other innovations.

Hawes (1979) additionally recognises the importance of pre-service training about which he says,

Implementation of curriculum changes and continuation of the new approaches in schools depend not only on the retraining of teachers, but also on knowledge, skills and attributes fostered during initial training. Indeed the relationship between initial training of teachers and curriculum development must be close and constant (p. 131).

Evidently, initial teacher training and in-service training are vital in the success of implementation of any given educational innovation.

Both general teacher education in core areas and training for specialisation in teaching subjects are vital in the training of teachers. In Kenya, secondary school teachers receive education in core educational concerns such as Educational Psychology, Philosophy of Education, History of Education, Curriculum Studies, Educational Economics and Educational Administration during their initial teacher education. In addition, they are given education intended to make them specialise in two teaching subjects: a major subject and a minor subject. HIV/AIDS Education and Sex Education are not among the subjects to be selected for specialisation in teacher training programmes. The Kenyan teacher education system thus lacks elaborate initial teacher training programmes with regard to the implementation of the HIV/AIDS curriculum in secondary schools.

Most in-service training programmes offered to teachers by teacher education institutions target the untrained teachers (UTs) and those teachers who would wish to advance in their professional ranks. These programmes follow a format almost similar to that in the initial teacher education. They are also therefore deficient on matters relating to HIV/AIDS.

Lately, efforts of in-servicing teachers on issues relating to HIV/AIDS are apparently increasing due to the realisation of the urgent need to equip teachers with the skills, knowledge and attitudes that they will use in educating the youth on matters pertaining HIV/AIDS. This urgent need has been necessitated by the fact that school going youths are increasingly being infected with HIV and therefore need to be educated on how to avoid contracting the virus.

The government through the Ministry of Education and the Kenya Institute of Education (K.I.E) has conducted some in-service courses on the teaching of

HIV/AIDS to a few teachers. Some Non-Governmental Organisations and other international agencies have also conducted and/or sponsored in-service programmes on the teaching of HIV/AIDS. These agencies include United Nations Children Education Fund (UNICEF) and the Centre for British Teachers (CFBT), which have conducted their in-service programmes in selected districts. CFBT has so far conducted in-service training in only a few districts, which include Nakuru, Kakamega, and Kisumu districts.

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The K.I.E has all along made continues efforts in the in-servicing of educators on HIV/AIDS Education. Initially K.I.E focused on training of AIDS Education trainers, which was done in 1998. It later changed its strategy and started focusing on classroom teachers and educational administrators such as the school head teachers and educational officers. So far K.I.E has conducted in-service programmes in various districts, which include Thika, Kiambu, Muranga, Nyeri, Kwale, Malindi, Mombasa, Tana River, Taita Taveta, Kitui, Garrisa, Homa Bay, Kakamega, Vihiga, Migori, Kisii, Tranzoia, Trukana, West Pokot, and Suba Districts. K.I.E. has also conducted some HIV/AIDS in-service training programmes in Nairobi province (R. W. Kamau, personal communication, May 17, 2002)\*.

In-service training programmes conducted by the K.I.E are mainly in form of workshops, which last for few days (usually six days). These workshops are normally done at the district level. The trainees in these workshops are expected to disseminate what they have learned to the rest of the teachers at the divisional, zone

\* R. tV. Kamau is a curriculum specialist at the KIE

and school levels. The K.I.E is also targeting teacher trainers. It for instance organised an HIV/AIDS workshop for tertiary college lecturers, which took place in the year 2002 (R. W. Kamau, personal communication, September 23, 2003).

In addition to conducting the training, K.I.E supplies teaching/learning materials to the workshop participants and schools. K.I.E recently availed books for distribution to all secondary schools in the republic. Every secondary school in the republic (both government and private secondary schools) is expected to have received six copies of 'Bloom or Doom: Your Choice' and two copies of the 'AIDS Education Facilitators' Handbook. These books were distributed through the regional education offices.

A major shortcoming that the K.I.E is experiencing is the lack of adequate funds for conducting intensive in-service courses and for adequate monitoring of the trainees' performance after they are in-serviced. The UNICEF sponsors most of K.I.E.'s in-service training programmes. This means that these programmes can only go on when funds are availed by UNICEF. For instance, the K.I.E planned to conduct not more than three HIV/AIDS training workshops in the year 2002 because the money availed by UNICEF was not adequate for conducting more workshops (R. W. Kamau, personal communication, May 17, 2002),

In the year 2001, the government of Kenya announced that it had plans of training one teacher per school in 2002 on how to implement HIV/AIDS Education, It aimed at training 5,000 teachers countrywide through this planned training programme (Siringi, 2001, December 10). The government did not however disclose how it would identify this small number of teachers from the bulky teacher population. The objective of training one teacher from every school has not been

attained so far. Even if this objective would be attained as planned, the number of those trained would be too small as compared to the total population of teachers in Kenya.

Currently, only a handful of the estimated total population of 260,000 teachers have undertaken in-service courses on the teaching of HIV/AIDS Education. This might be one reason as to why teachers in many schools are not implementing the HIV/AIDS Education curriculum as is expected of them. Some of these teachers hardly talk to the learners about HIV/AIDS issues,

### **2.3 Sex, Sex Education, HIV/AIDS Education and Related Research Work**

The term 'sex' has a number of meanings. Longman dictionary of contemporary English gives the following definitions to this term: "1) condition of being either male or female; ... 2) the set of all male or female people; ... 3) sexual intercourse ... and 4) activities connected with (and including) this act" [the act of sexual intercourse] (summers & Rundell, 1987 p. 958). To many people, a mention of the term sex may imply the actual physical sexual intercourse. Saccuzzo and Ingram (1993) however note that defining sex is much broader and more complicated than one can imagine. They argue that though sexual intercourse is certainly a part of sex, the 'most important and complicated' aspect of sexuality is the physiological aspect (the meaning that people attach to sex).

Sex may mean different things to different people. Saccuzzo and Ingram (1993) say the following about the meaning different people attach to sex:

For some it may be symbolic of love. For others, it may represent an aspect of one's self esteem ("if she'll have sex with me, then I must be an OK

person") or the object of conquest; to "score" many times not only demonstrates a sense of triumph, but also may make one feel worthwhile. Still for others, sex might be a tool, doled out for favors and withheld to punish (p. 220).

Whichever meaning one attaches to sex will greatly influence how he/she views sexuality. Usually however, the "act of sexuality has a physiological significance far beyond two people merely engaging in a purely physical act" (p. 220).

Meier (1994) stresses the value people attach to sex in their daily lives in the following way: "Sex is everywhere. It's on television, on movies, on radios, in rock videos, on billboards, in magazines. Every one thinks about it, talks about it, wonders about it. Sex must be pretty important" (p. 43).

Despite sex 'being everywhere' it is not common to find people talking about it openly in public. The mentioning of the word 'sex' and other related terms such as vagina and penis might be an obscenity in most African communities especially when mentioned in one's own language. It has been the habit of many people to practice obscurantism on matters pertaining to sexuality. Saccuzzo and Ingram (1993) attribute this obscurantism to the existing attitudes that sexuality is a taboo. They say,

Despite our fascination with sex, many will consider it a taboo subject. Although hesitation to discuss sexuality is probably okay with casual acquaintances (you probably do not talk about sex very much with you mail carrier), for many families and relationship partners, open and frank discussions about sex are healthy and appropriate. Such discussions,



however, are usually quite rare, and in some cases non-existent (pp. 223-224).

While commenting about people's laxity to talk about sex Hilary (1990) notes, "sex is sometimes an embarrassing or painful topic for adults but we must remember that it can be one of the most positive aspects of any person's experiences" (p. 59). Despite its positive aspect, sex has apparently caused great misery in the present times. It has led to a lot of suffering and agony to many since it is the leading route through which sexually transmitted infections (STIs), including the dreadful HIV/AIDS are transmitted. This phenomenon has in part contributed to the perpetuation of the incomprehension surrounding sexuality.

As inexplicable as it appears and as much as people try to avoid the topic, all categories of people including school-going children seem to have interest in sex. About the interest school children have in sex, Hurlock (1978) says, "Through the school years, interest in sex increases, usually reaching a peak during the period of puberty changes" (p. 438). She identifies patterns of 'interests in sex' in children as they develop to puberty about which she says:

During the initial years of life, pre-school years and older childhood period, the children's interest is in the origin of babies, the difference between the sexes and relationships of the two sexes respectively. At puberty, interest in sex shifts to the causes and meaning of changes taking place within the individual. Interest in sex at puberty stage is mainly subjective unlike in the earlier stages when it is objective, (p. 44).

It is the adolescents' subjective interest in sex, which makes their approach to sexuality different from that of children and adults.

Conditions that result to increased interest in sex, as children grow older include peer pressure, influence of mass media, occurrence of everyday life, which relate to sexual activities (e.g. pregnancy) and sex education (Hurlock, 1978). About the contribution of sex education to the interest of youth in sex, Hurlock claims.

Unquestionably one of the strongest contributions to children's interest in sex is sex education. When parents make a point of taking their children aside, away from siblings and tell them behind closed doors the 'facts of life' ending with the admonition not to talk about these matters to anyone, can children escape becoming greatly invested in this mysterious aspect of life? Sex education classes that can be attended only with written consent of parents, add their share to heightening children's interest in sex (p. 438).

Teenagers especially the adolescents are presumably the most curious on matters pertaining sexuality than any other category of people. Meier (1994) makes the following observation about teenagers in relation to sex:

Most teenagers think about sex. They are curious about their new feelings and they wonder what it would be like to have a sexual relationship. This is the natural part of growing up. Many teenagers also come under a lot of pressure to start having sex. This pressure comes at them from several different directions. Among their classmates at school, sex is likely to become a major topic of conversation (p. 8).

Various research works have shown that on average more teenagers are having sex at an early age than in the past (Saccuzzo & Ingram, 1993). Over half of the world's population has had unprotected sex before the age of 16 years

(UNAIDS/The Panos Institute, 2001). The involvement of teenagers in whichever form of sex is repugnant in most societies.

There is no sufficient reason that has been given to explain why some teenagers get involved in morally unacceptable sexual activities especially premarital sex/fornication and non-traditional sexuality such as homosexuality and lesbianism. Teenagers involved in such activities do not seem to understand fully why they are doing so. Meier (1994) says the following about teenagers' involvement in such sexual activities: "Many teenagers themselves don't seem to have a clear idea about why they drift into sexual activity. ... Since teenagers are trying to become grown-ups, it's easy to see why they might have trouble deciding what to do about sex" (p. 33).

Various reasons have been suggested for the youth's involvement in premarital sex. Meier (1994) suggests the following as some of the possible reasons:

- i) Curiosity- adolescents simply want to discover what having sex feels like.
- ii) Pressure from their peers to have sex with them or with others.
- iii) Some view having sex with somebody as a prove of love.
- iv) Some have sex to strengthen (or to continue) their relationship(s) with their sexual partner(s).
- v) The influence of alcohol and drugs.

About the influence of alcohol and drugs on the teenager's tendency to get involved in sexual activities, Meiers (1994) says,

Sometimes alcohol or drugs play a part in a teenager's decision to have sex. A person who is drinking alcohol or using drugs is less likely to be cautious and responsible about their [his/her] behavior. Under the influence of these

substances, teenagers sometimes take chances they otherwise wouldn't.

They may ignore their previous decision not to have sex, or may be careless about using protection against pregnancy and disease (p. 10).

UNAIDS/The Panos Institute (2001) also recognise that the use of alcohol and drugs in large quantities makes safer sex less likely and thus contributes to increase in the HIV infections

Some youths hold some myths about sex, which may also contribute to them having 'unprotected' sex. Meiers (1994) identifies the following as some of the myths youths hold about sex:

1. You cannot get pregnant the first time you have heterosexual sex.
2. You cannot get pregnant if you have intercourse standing up.
3. You cannot get pregnant if you have sex a lot.
4. You cannot get pregnant if you don't have sex a lot.
5. You cannot get pregnant if you jump up and down after sexual intercourse.
6. You cannot get pregnant if you have sex while drunk.
7. If you take a birth control pill just before intercourse, you cannot get pregnant.
8. A girl won't get pregnant if she douches with a soft drink after sex.

Although all the above myths relate to pregnancy, some of them have been transferred to the HIV/AIDS condition. For example some people (both youth and adults) hold the following myths about contracting or not contracting HIV through sexual intercourse:

- 0 If you take birth control pills just before intercourse, you cannot contract HIV.
- ") You cannot contract HIV the first time you have sex.
- "•) You cannot contract HIV if you don't have sex a lot.

Such myths can only be countered by supplying the youth with the correct information about sex and HIV/AIDS. Sex Education/ HIV/AIDS classes would be the most appropriate forums for doing this.

The effectiveness of Sex Education/ HIV/AIDS classes in meeting the intended objectives is an issue that needs to be looked into critically. The effectiveness of these classes is in doubt since some of the adults who teach these classes are also involved in undesirable sexual activities. These adults just like most adolescents also don't seem to understand why they get involved in such activities.

Meier (1994) notes that involvement in an undesirable sexual activity is a complex issue since many adults are confused about it too. These "adults tell teenagers not to have sex, to wait until they are married, but many [adults] do not follow their own rules" (p. 34). Meier adds,

Teenagers also get information about adults and sex through television and the movies. What they see on their favourite TV programmes and in the theatres tell them that sex is easy, romantic, and exiting. There is little to warn teenagers about the possible consequences of sex, including unwanted pregnancy, AIDS and other sexually transmitted diseases. There is even less information that tells teens how to be responsible about sex. The same TV networks that air sex afternoon soap operas refuse to run commercials about contraceptives. Adults can't seem to decide whether sex is good or bad (p, 34).

The confusing signals that the adults convey (through their activities) to teenagers about sex are a great impediment to the effective teaching of Sex Education and make its teaching a complex matter.

Many countries have nevertheless introduced or attempted to introduce sex education into their formal school system with an aim of instilling acceptable morals on matters pertaining to sex. By the early 1970s sex education had been introduced into formal systems of education in a number of countries. This included Britain, Cyprus, Sweden, Egypt, Tunisia and Afghanistan (Nazer, 1974). Other countries in which Sex Education has been introduced into the formal education system include United States of America (USA), Canada, Netherlands and France (Meier, 1994). In some of these countries, sex education is infused into and/or integrated with some subject that are considered to be more appropriate. In others such as the USA Sex Education exists as a separate subject (Hurlock, 1978). In most of these countries there has been considerable opposition to the introduction and teaching of Sex Education (Nazer, 1974; Hurlock, 1978; Meier, 1994)

Those people who oppose introduction of sex education give various reasons for their opposition. Some "argue that teaching young people about sex, and especially teaching them about contraceptives, is like giving them the green light to become sexually active. They believe teenagers must be taught that sex should be reserved for marriage" (Meier, 1994 p. 81). Some see teaching sex education to mixed classes of 'hot-blooded' teenagers to be of little moral value. These people liken teaching teenagers about sex to 'pouring fuel on fire' (Meier, 1994). They argue that teaching it to adolescents would encourage them to venture into sex rather than practising abstinence thus beating the purpose of offering it (Malek, 1974; Meier, 1994). The Roman Catholic Church has in the past resisted teaching of issues such as the use of contraceptives in Sex Education for religious reasons (Kozakiewicz, 1974).

In some instances, teaching of sex education has been criticised for lack of organisation of the content. While commenting about sex Education in Britain, Hilary (1990) argues that sex education "is arguably, both the most contentious and the least well integrated 'topic' with health curriculum" (p. 67). Hilary further notes that in Britain "many schools (and colleges of further education, in so far as they attend to the issue at all) have dealt with sex education through a combination of biology lessons and visiting speakers" (p. 67). He notes that although this approach may seem convenient to the school administrators and established teaching staff, it has several disadvantages from the learners' perspective since it reinforces in the learner a negative perception on various issues concerning sexuality. About visiting speakers Hilary (1990) says,

The appearance of a relatively anonymous visitor to explain the essentials of where babies come from and (usually) how to avoid having them, is likely to confirm in young people's mind the impression that most of the 'ordinary' staff in the institution are not willing to discuss such matter (p. 67).

Those who support teaching of Sex Education give various reasons to support their stand. Meier (1994) outlines some of these reasons:

They argue that teenagers who don't have enough information about sex and contraception are more likely to start having sex and initiating pregnancies. Since many parents don't teach their children about sex, the schools should. They also argue that teenagers are constantly under pressure from the media and their peers to have sex, and that many will succumb. It is better to give them facts about contraception so that they don't end up with unwanted pregnancies (p. 81).

Though in the above argument the proponents of Sex Education points out unwanted pregnancies as a prime reason for offering Sex Education, the susceptibility of school going teenagers to STDs and HIV/AIDS would be another strong reason for offering it to the entire school going population.

Meier (1994) apparently supports teaching of Sex Education by citing Canada, Netherlands, France and Sweden as some of the countries in which its correct teaching has reduced teenage pregnancies. He says that in these countries young people are given adequate information about sex and pregnancy prevention either at school or at family planning clinics. They (young people including teenagers) are also encouraged to use birth control measures and can easily obtain inexpensive contraceptives.

Hilary (1990) suggests that with the increase of Sexually transmitted diseases and HIV/AIDS cases, teachers should move away from straight forwardly medical-biological definitions of sex. They should instead adopt a more open way of handling the Sex Education topics so that they are more able to describe a life experience, which means something to the students.

In Kenya, Sex Education does not exist as a distinct subject in schools. Its content is instead taught by infusion and integration into subjects such as Social Education and Ethics (S.E.E), Religious Education (R.F>) and Biology. Its introduction as a distinct subject has all along faced pronounced opposition especially from some religious groups. Some people have however supported the introduction of Sex Education as a distinct subject.

In the HIV/AIDS era, introduction of Sex Education has seemed inevitable. The Kenyan government has introduced it through the HIV/AIDS Education



curriculum, which is being implemented in schools. Apart from targeting the school going youths through the implementation of the HIV/AIDS curriculum, the Kenyan government has also targeted college/university communities and the entire adult population in the society. The college and university communities are targeted presumably through both the formal and informal curricula. Counselling services form part of the informal curricula used to educate the university community on HIV/AIDS matters. Adults in the various societies are targeted through adult education classes.

A number of research studies have been carried out in Kenya in a bid to establish the status of various issues that relate to dissemination of HIV/AIDS information. These researches have often targeted both the learners and the educators.

Results from previous researches and experiences from other countries have shown that comprehensive Sex Education, which is usually accompanied with condom distribution leads to the following:

- i. It raises the levels of HIV/AIDS knowledge, changes attitudes and increases condom use.
- ii. It may delay sex in youth to later years.
- ii. It does not increase sexual activities and may decrease the number of sexual partners (Population council, 1999),
- iv- It decreases incidences of pregnancies and Sexually transmitted infections (STIs) (UNAIDS, 2002, July),

This revelation acts as dependable evidence that supports the proponents of Sex Education and HIV/AIDS Education.

A study carried out by Malonza (1991) on the knowledge, behaviour and attitudes relating to HIV infection among secondary school students in Kitui district revealed that 87% of the students had knowledge about the existence of AIDS. The study finding did however indicate that the students had a lot of misconception on some facts on HIV/AIDS. Such misconceptions among the students need to be dispelled since they have a great negative impact on the control of HIV infections,

A study by Sambwa (1990) investigated the knowledge of sexual-risk taking behaviours, perceptions of risk and prevention of HIV/AIDS among students of Kenyatta University. Findings from this study indicated that the HIV/AIDS Education programmes at the university were not completely effective in making students aware of guarding themselves against infection with HIV. The study therefore recommended that the HIV/AIDS Education programmes needed to be reinforced and intensified so as to increase the students' level of HIV/AIDS knowledge, make the students develop a high perception of vulnerability and to promote positive health changes in their normative sexual behaviours.

A high level of HIV/AIDS knowledge is essential for any person to have a high perception of vulnerability and a positive change in sexual behaviour. It is also likely to bring about a positive attitude towards HIV/AIDS and HIV/AIDS Education. UNAIDS, (2002, July) however argues that knowledge in itself "is not enough: behavioural changes require locally-appropriate targeted information, training in negotiation and decision-making skills, social and legal support for safer behaviours, access to the means of prevention (e.g., condoms or clean needles) and motivation to change behaviour" (p. 81). All these aspects need to be met adequately if HIV/AIDS Education has to be meaningful.

Another study by Mbuu (1995) on how HIV/AIDS information was being communicated and received in one of the Kenyan universities revealed that majority of the respondents were aware of AIDS as a fatal disease. The investigation however established that the university had "not done much in as far as educating and sensitising its own community about the seriousness of AIDS [was concerned]" (p. xi). University authorities need to do enough in sensitising their communities about the seriousness of HIV/AIDS since some of the members of this community are the ones who ultimately become teachers and are expected to educate others on HIV/AIDS issues.

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A research study by Kimani (1996) on AIDS knowledge and the attitude towards AIDS of Adult Education teachers concluded that they had "adequate AIDS knowledge and positive attitude and could therefore be trained to teach adult learners on the AIDS disease" (p. 28). From this research conclusion, one can deduce that adequate HIV/AIDS knowledge and positive attitude towards HIV/AIDS are not the only recipe for effective implementation of the HIV/AIDS curriculum. Adequate skills are also necessary. These skills can only be obtained from proper training.

There was an apparent research gap as regards the process of implementing HIV/AIDS Education in secondary schools. This research study was carried out to fill this perceived gap. It was imperative that a study be carried out in secondary schools with the prime intention of exposing the HIV/AIDS level of knowledge of the teachers and their attitude towards HIV/AIDS Education.

## **2.4 HIV/AIDS Education Curriculum**

### **2.4.1 Need For Introducing HIV/AIDS Education**

In the 1980s, it was believed that HIV/AIDS was confined to 'marginal risk groups'. These groups were identified as populations of prostitutes, homosexuals (politely called men who have sex with other men), intravenous drug users and haemophiliacs (Panos Dossier Institute, 1988; Saccuzzo & Ingram, 1993). Currently, although these so called 'marginal risk groups' are at higher risk of getting infected with HIV, the rest of the population is at risk too. The notion that HIV/AIDS is confined to a certain group of people has therefore been proved to be erroneous.

The 'marginal risk group' mentality has had an enormous limitation to the efforts aimed at curbing the spread of AIDS. It has in the past led to HIV/AIDS control programmes being focused on a relatively small group of people who are considered to belong to the 'marginal risk groups' while ignoring the rest of the population, which is equally vulnerable to HIV infections. The risk of contracting HIV, which in the past was largely tied to the 'marginal risk groups', is in reality tied to one's involvement in risky activities such as having unprotected sex and sharing of piercing instruments.

A number of school-going teenage populations are involved in pre-marital sex, which is one of the risky activities through which HIV is contracted. A possible reason for their involvement in sex may be because many students think that they are virtually invulnerable to sexually transmitted diseases such as AIDS (Saccuzzo & Ingram, 1993). They view AIDS as "homosexual or intravenous drug users'

disease" (p. 227). They also associate it with commercial sex workers. The 'marginal risk group' mentality might be behind this erroneous perception.

The current saddening status of the HIV/AIDS scourge has necessitated a new approach that has moved away from the traditional 'marginal risk groups' mentality. The new approach considers all those involved in activities that may lead to HIV transmission to be at risk. Current statistics on the status of the HIV/AIDS condition have proved that all sexually active persons (including the sexually active school going populations) are vulnerable to HIV infection if they do not take necessary precautions. UNAIDS and The Panos Institute (2001) note the following about the vulnerability of young people to HIV infections:

Of all men and women and across all age groups, it is among young men aged between 15 and 24 where the riskiest attitudes and behaviors relating to HIV can be found - from drug injection and multiple sexual partners, through to unprotected sex between men (p. 3).

It now evident that the school going populations are becoming more vulnerable to HIV infection mainly because of their involvement in premarital sex (K.I.E, 1997c). This has led to various government developing HIV/AIDS control programmes that are aimed at curbing the spread of HIV amongst the school going populations. These governments have intensified their efforts to institute and ensure proper implementation of HIV/AIDS control programmes in schools. The AIDS control programmes targeting the school going populations are being implemented in form of HIV/AIDS Education curricula that have been introduced to the formal school curriculum in various countries. In some of these countries curriculum

developers have hastily developed an HIV/AIDS Education curriculum for their respective countries due to the urgency of the matter,

The HIV/AIDS Education curriculum (or AIDS Education as it is referred to in Kenya) was first introduced into the Kenyan formal school curriculum in the late 1990s. The content outlined by the AIDS Education syllabus for schools and colleges authored and published by KIE in 1999 clearly reveals that AIDS Education is basically Sex Education with a little more stress on HIV/AIDS. There has been less resistance to its introduction as compared to the resistance the intended introduction of Sex Education received from various quarters. The reduced resistance may be attributed to the incurable status of HIV/AIDS, which has made many to realise the need for providing education that will enable the youth to avoid contracting HIV. The actual HIV/AIDS Education implementation process however seems to be lagging.

#### **2.4.2 Key Concerns in the HIV/AIDS Education Curriculum**

There are various key concerns that need to be looked into if HIV/AIDS Education has to meet its intended objectives. These concerns relate to the various aspects/elements that are vital in any curriculum implementation process. These aspects encompass the teachers, learners, learning/teaching materials and teaching methods. These and others are discussed below.

Teachers and learners are the two most crucial entities in the implementation of the HIV/AIDS curriculum. Teachers need to have the necessary knowledge, skills and attitude needed to ensure that the HIV/AIDS Curriculum has a positive impact on the learners. They need to dispel mythical beliefs about this condition from themselves and from the learners. Silin (1997) rightly argues,

For young children and for many adults as well, fear needs to be replaced by understanding, misinformation by facts. HIV is part of daily life and should be treated as such in schools. ... If we avoid engaging with children about HIV/AIDS even to counter false information about transmission, we foster the belief that HIV/AIDS is a mystery, a taboo subject that teachers can not or will not address (p. 227)

Silin (1997) claims, "HIV/AIDS presents a complex set of challenges for the curriculum maker" (p. 224). He supports this claim by citing the case of the HIV/AIDS Education Curriculum in the United States of America (USA) in the early years of its introduction about which he says:

Curricular materials reflected interpretations of the disease; they focused on prevention for adolescent and claimed to offer only 'facts'. But the assertion of objectivity is in itself a form of bias, carrying the implication that it is possible to separate facts from value, object from subject, the word from the world (p. 225).

Such an approach cannot be effective if HIV/AIDS Curriculum has to achievement the intended purpose.

Appropriate and adequate learning/teaching materials are vital for the successful attainment of the objectives of any given curriculum. Care should therefore be taken during the preparation, selection and use of books and other learning materials. For example if one intends to use a poster to communicate information on HIV/AIDS, the poster should be attractive and should have a simple and short message. It should also be strategically placed but should not be left there

for too long since people will become too familiar with it to an extent of not noticing it (ignoring it deliberately) (Hubley, 1990).

The actual teaching process has a great impact on what the student will gain from the curriculum. The teaching method used and the actual mode of presentation should be appropriate. Teachers should be very cautious in all that they say during their interaction with the learners in and out of the classroom. Misrepresentation or inappropriate presentation of HIV/AIDS Education content should be avoided since this action can have distressing effect on the learners who might be affected and/or infected by HIV/AIDS. It can also lead to an increase in stigmatisation of the HIV/AIDS condition amongst the learners.

Moral judgement on existing sexual activities should also be avoided as much as possible since such moves do not seem to change people's sexual behaviours (Hubley, 1990). HIV/AIDS educators should concentrate their efforts on educating learners about the importance of safe sexual practices such as abstinence and adoption of low risk sexual behaviour instead of passing moral judgement on the existing sexual activities.

Adolescents are usually "divided by their own sexual developments. Some may be embarrassed by the changes taking place in their bodies especially if people make remarks about their physical looks" (Hendrikz, 1986 p. 31). Teachers should therefore exercise great care when presenting HIV/AIDS content that relate to the changes taking place during adolescence.

Teachers also need to live what they teach. They should set a good example by making sure that their own behaviour is consistent with stable faithful relationships. This will provide the needed reinforcement to the students who learn



a great deal from the 'hidden curriculum' that public school provides through the personal example of the teacher (Hubley, 1990). It will also eliminate scepticism from those learners who might be viewing messages such as delaying sex until marriage as the teachers' attempt to deny them the pleasures that adults enjoy.

A correct decision should be taken about how to introduce HIV/AIDS Education and the level (class or form) at which some content in the HIV/AIDS Education should be learned. A critical analysis of the HIV/AIDS Education content should be done to determine the level at which any given content should be introduced.

Introduction of HIV/AIDS Education should however not be delayed to later schooling years. In arguing against such a delay, Hubley (1990) says.

It is tempting to leave AIDS and sexually transmitted diseases until children are in secondary schools and are fourteen to sixteen years old. Others feel that this is too late as sexual activity would already have been started by some pupils. It would also not reach those children that did not progress beyond primary school (p. 72).

UNAIDS (2002, July) also argues that since timing of people's sex debuts varies widely, comprehensive HIV/AIDS Education programmes "should be sustained, starting before puberty and continuing throughout a young person's school years" (P- 74).

Another vital decision that should be made is on who should teach HIV/AIDS Education and whether it should be taught separately as a distinct subject or it should be incorporated into the content of the already existing subject(s). Concerning who should teach HIV/AIDS Education Hubley (1990) says,

"Outside health worker can play useful role, but the teachers themselves should take responsibility for the AIDS Education in the school. They are in the school all the time and can provide guidance and counselling to students with special problems" (p. 72).

Hublely (1990) suggests the following about the mode of teaching AIDS Education content:

It is best if education on AIDS is not treated separately but is included as part of general health education programs with other sexually transmitted diseases and personal relationships. ... There may be parts of the existing syllabus called 'health education' where AIDS and sexually transmitted diseases can be included. However it is possible to deal with these topics and explore relationships, feelings and prejudices in a thought-provoking and effective way in subjects such as biology, religious studies, English, drama, music and out of school activities (p. 72).

The inclusion of AIDS Education content to the already existing subjects and other school and out of school activities is what KIE (1997b) calls infusion and integration. Though some of the subjects mentioned above (drama and health education) do not exist in the Kenyan education system as distinct subjects, the mode of teaching advocated by K.I.E (1997b) and Hubley (1990) is similar.

Generally, there is need for educators to take great caution when making decisions on the various issues that relate to the implementation of HIV/AIDS Education curriculum. Without such caution, the HIV/AIDS curriculum may not achieve its intended purpose.

### 2.4.3 AIDS Education in Kenya

In Kenya HIV/AIDS Curriculum is in its initial stages of implementation. KIE (1997a) gives three main reasons as to why it was introduced and why it is being given special emphasis:

- [AIDS] was identified recently in 1981
- The rate at which people are being infected in Kenya and all over the world is alarming and has necessitated further strengthening of AIDS Education in the existing subjects.
- There is no known cure for AIDS and those infected die soon or later (p. 66).

An AIDS Education syllabus for schools and colleges released by KIE gives eight general objectives of AIDS Education in Kenya. These are listed below.

The learner should be able to:

- Acquire necessary knowledge, skills about HIV/AIDS, STDs.
- Appreciate facts and issues related to HIV/AIDS and STDs.
- Develop life skills that will lead to AIDS and STDs free life.
- Identify appropriate resources of information on HIV/AIDS related issues.
- Make decisions about personal and social behaviour that reduces risk of HIV and STDs' infection.
- Show compassion towards and concern for those infected and affected by HIV/AIDS.
- To be actively involved in school and out of school activities aimed at prevention and control of HIV and STDs' infections.

- Communicate effectively with peers and others, the issues and concerns related to HIV/AIDS and STDs (KIE, 1999, p. vii).

The AIDS Education syllabus outlines what is to be covered at the primary school, secondary school and teacher training college levels of education. At the primary and secondary school levels, the syllabus allocates various topics to each class/form starting from class one to form four. There are eleven topics in the syllabus at the college level. The AIDS Education syllabus for colleges is meant for those undergoing training in the following institutions:

- 1) Early Childhood Development Teacher Training.
- 2) Primary Teachers' Colleges
- 3) Technical Teachers' Training Institutions.
- 4) Non-Formal Education Providers (KIE, 1999).

Universities are not catered for by the syllabus possibly because of their autonomy on matters relating to the curricula they offer.

The AIDS Education syllabus gives an outline of the following for all AIDS topics in schools and colleges:

- i) Specific objectives.
- ii) Learning Content.
- iii) Learning/Teaching activities.
- iv) Learning/teaching resources.
- v) Assessment methods.
- vi) Suggested time.

The KIE syllabus suggests the following Learning/Teaching resources for use in the teaching of HIV/AIDS Education: charts, pamphlets, magazines, KIE

materials (e.g. Bloom or Doom: Your Choice, AIDS Education Facilitator's Hand Book etc.), newsletters and publications by various bodies such as Care Kenya, World Health Organisation (WHO), UNICEF, Ministry of Health, AMREF, Kenya AIDS Society and Non-Governmental Organisations (NGOs). Written tests, oral questions/quizzes/tests, assignments, observations, project work and essays are some of the assessment methods that the KIE suggests for use. The table in appendix B gives a summary of the specific objectives, content, teaching/learning activities, and the suggested time for AIDS Education at the secondary school level as outlined by the AIDS Education syllabus.

K.I.E (1997b) advocates for infusion and integration of AIDS Education to the existing subjects as a better strategy than creating a new subject. Infusion of HIV/AIDS content into the already existing subjects can be done through teaching HIV/AIDS messages at appropriate points when the main subject is being taught. Some subjects are more suitable in achieving this. These subjects are called 'main carrier subjects'.

KIE (1997b) identifies science, GHC, Home Science, Religious Education, Biology, Geography and Social Education and Ethics as the main HIV/AIDS carrier subjects. These subjects by their own nature have topics that have plug-in-points. "A plug-in-point is a point in a topic or subject where a specific message on AIDS can be passed with ease" (p. 80). Infusion of AIDS Education messages "should not be seen to be confined to main carrier subjects only. In fact AIDS can be taught alongside any other subject. All that is required is your [the teacher's] imagination" (p. 78). AIDS messages should not be passed through infusion only but "can also be integrated into the co-curriculum and out of school activities" (p. 84),

Teachers are likely to face a myriad of problems that can make the implementation of the HIV/AIDS difficult. These may include the following:

- i) Lack of adequate Learning/Teaching resources.
- ii) Lack of adequate time needed to cover content in their subject areas as well as the HIV/AIDS Education content.
- iii) Some of the Learning/Teaching materials available are not well synchronised with the syllabus. For example KIF, has published a single learners' book for secondary school AIDS Education (Bloom or Doom: your choice) that has nine topics to be covered presumably by all secondary school learners. The book does not split the topics according to how the syllabus intends them to be covered in the various forms. This means that the learners would need the syllabus (or at least an informed teacher's guidance) to know which content suits his/her level of education, (See Appendices B and C for comparison between the content sequence in the syllabus and that in 'Bloom or Doom: Your Choice',
- iv) Lack of the skills needed in the infusion and integration of the AIDS Education content.
- v) Lack of the moral authority (especially for teachers with 'loose' morals) to educate learners on the importance of good morals in the control of HIV.
- vi) Prejudice on the part of those involved (both teachers and learners) concerning issues that relate to sex and HIV/AIDS Education.
- vii) Lack of the necessary knowledge on matters pertaining to HIV/AIDS,

Silin (1997) asserts that a major phenomenon that might have resulted to some of the teachers in the USA failing to teach the HIV/AIDS Education to their

learners in the past was a lack of confidence in their own HIV/AIDS knowledge. These teachers resorted to keep silent (pretending that the subject does not exist) instead of placing their own authority in jeopardy with students. They were unwilling to admit to the students that they did not know the answers to some of the students' questions on HIV/AIDS. This same situation may be prevailing in Kenya where implementation of the HIV/AIDS Education curriculum seems to be lagging, Silin suggests the following solution to the above situation:

While the obvious remedy to this situation is to provide all teachers with a good basic education about HIV/AIDS so that they feel competent, a long-range response must also be pursued by encouraging teachers and those who work with them to examine the source of their authority. For HIV/AIDS is not the only difficult issue teachers face in the classroom where the willingness to model the role of learner takes precedence over the traditional role of knower (p. 235).

From the preceding argument one may conclude that teachers expected to implement the HIV/AIDS Education curriculum need adequate prior training. This training is vital since teaching of HIV/AIDS Education involves talking about sex, drugs and death which are often taboo subjects that are not easily packaged into highly, rationalised lessons (Silin, 1997). An additional reason for urgent need for adequate training of the teachers is the fact that teaching of HIV/AIDS Education encompasses inculcation of long-term moral values, which will ultimately reduce the rate of HIV infection in the youth population. Development of these moral values is a complex issue, which involves much more than obedience to and acceptance of ideas put forward. It involves development of one's ability to make

correct decisions in various situations (Hendrikz, 1986). Teachers therefore need to possess skills that they will use during the process of guiding learners to develop a consistent set of morally accepted values and ideas.

## **2.5 The History of HIV/AIDS**

There is a mystery surrounding the origin of HIV/AIDS. Different people have put forward arguments to suggest its origin. This section will not address any of the arguments. It only intends to outline historical facts concerning this condition.

The first cases of unusual immune system failure were reported among gay men in USA in 1981 (Bellavance, 1996; Flaskerud & Unguarskij, 1995). It was first brought into the public's attention in June 1981 by the Federal Center of Disease Control, which reported a rare form of Pneumonia (*Pneumonia carinii* Pneumonia - PCP) in five gay men (Flaskerud & Unguarskij, 1995; Rathus & Bough, 1994). At that time AIDS was a mysterious kind of illness and was called Gay Related Immune Deficiency (GRID) by the Center of disease control (CDC) (Rathus & Boughn, 1994). It was thought to be as a direct result of the homosexual lifestyle (Rathus & Boughn, 1994; Sim & Jeffries, 1990). In 1982 cases of GRID were reported amongst haemophiliacs. Slim disease (as it was referred by the locals) was encountered in Rakai area in Uganda in this same year (Hubley, 1990). The CDC in Atlanta defined this novel condition as AIDS for the first time then.

In 1983, the CDC reported the first case among heterosexuals. It was during this year that three modes of transmission were confirmed: blood transfusion, mother to child and sexual intercourse (Rathus & Boughn, 1994). The previously



unknown Human Immune Virus (HIV) was first isolated from an AIDS patient and identified as the cause of AIDS by Dr. Luc Montagnier at the Institut Pasteur in France in this same year (Hubley, 1990; Rathus & Boughn, 1994). The virus was then called Lymphadenopathy-Associated Virus (LAV) (Frenay & Mahoney, 1991),

In 1984, a U.S.A research team led by Dr. Robert C. Gallo of the National Cancer Institute also isolated an HIV virus which they named Human T-Lymphotropic Virus type III (HTLV-III) (Flaskerud & Ungarskij 1995; Rathus & Boughn, 1994) At the same time, the West Coast Scientists at the University of California San Francisco were studying a similar virus, which they called AIDS-associated retrovirus (ARV) (Flaskerud & Ungarskij 1995) The first HIV/AIDS case was reported in Kenya in this year.

By 1985, the scope of HIV/AIDS had grown. At least one case of HIV/AIDS had been reported in each region of the world (Rathus & Boughn, 1994). In the same year, the Federal Drug Administration (FDA) approved and licensed the first HIV antibody test (ELISA test) (Hubley, 1990). During this year, the first international conference on HIV/AIDS was held in Atlanta Georgia (Rathus & Boughn, 1994).

In the summer of 1986, the International Society on the Taxonomy of viruses arbitrated for a common name for the virus causing AIDS and called it human immunodeficiency virus (HIV). "For the sake of standardisation and communication, the virus is now known world wide as HIV-1" (Flaskerud & Ungarskij, 1995, p. 4). The second HIV/AIDS conference was held in June 1986. In this conference researchers revealed that HIV could lie dormant in ones body for a long time before AIDS develops.

In 1987, Africa's first community response to AIDS: The AIDS Support Organisation (TASO) was formed in Uganda. It became a role model for similar activities all over the world. In the same year, the International Council of AIDS Service Organisations (ICASO) and Global Network of people living with AIDS were founded. In month of February 1987, WHO established a special programme on AIDS, which later became an HIV/AIDS Global Programme. FDA in the USA approved the first therapy for AIDS -Azidothymidine (AZT) (now commonly called Zidovudine) for use in the same year. A third AIDS International Conference was held in this year (Rathus & Boughn, 1994).

A fourth international AIDS conference was held in Stockholm Sweden in 1988. In 1989 a fifth international AIDS conference was held in Montreal Canada. Here, researchers revealed that studies had shown that AZT could slow down but could not stop the progression of HIV/AIDS. The FDA granted limited approval to the using of aerosol Pentamidine to prevent *Pneumonia carinii* Pneumonia (PCP) during this year.

A sixth international AIDS Conference was held in 1990. The seventh International Conference was held in June 1991. It marked the tenth anniversary since the first cases of AIDS were reported. The World Health Organisation revealed that 10 million people were infected with HIV as at that time and projected that HIV could possibly have infect 40 million people by the year 2000. In this same year (1991), Dideoxyinosine (DDI) became the second drug to be approved for the treatment of AIDS. It was approved while still in its experimental stage of development. Its approval was an indication of how serious the HIV/AIDS situation

was globally and how people were desperate to get a treatment for the HIV/AIDS (Rathus & Boughn, 1994).

Up to 1992, PCI\* and Kaposi's sarcoma were the main symptoms that were used to define AIDS. In 1993, FDA expanded the definition to include three other indicators: pulmonary tuberculosis, recurrent bacterial pneumonia and invasive cancer of the cervix. HIV positive people with less than 200 CD4 cells per cubic millimetre of blood were also considered to have developed AIDS even if clinical symptoms were absent (Flaskerud & Unguarskij 1995; Rathus & Boughn, 1994). A ninth International AIDS Conference was held in Berlin in 1993. During this year, the WHO estimated that 14 million people were infected with HIV.

In 1994 scientists developed the first treatment regimen to reduce mother to child transmission. In 1996, a joint United Nations programme on HIV/AIDS (UNAIDS) was created. Evidence of the efficacy of High Active Antiretroviral Therapy (HAART) was presented for the first time this year.

In the late 1980s and in the 1990s various scientists were developing possible vaccines. "By 1993 more than 20 vaccines had been entered into clinical trials to assess their safety" (Flaskerud & Unguarskij, 1995, p. 75). In 1999, the first efficacy trial of a potential HIV vaccine in developing countries started in Thailand. In Kenya, there was a first efficacy trial of a potential HIV/AIDS vaccine in the year 2000. So far none of the many vaccines on trail have been licensed since none has been proved to be effective.

HIV/AIDS is currently a global concern. Various governmental and non-governmental organisations have initiated various programmes aimed at minimising the spread of HIV. The United Nations Organisation (UN) leads in the fight of

HIV/AIDS through its various bodies. It organises and/or sponsors various meetings on HIV/AIDS. One such meeting is the annual HIV/AIDS International conference, Some of the issues discussed in these meetings include new scientific discoveries on issues relating to development of vaccines, treatment and possible cure for HIV/AIDS.

## **2.6 HIV/AIDS Epidemiology**

The number of people infected with HIV has been increasing at an alarming rate since 1981 when the first clinical evidence of AIDS was reported. In June 1991, WHO estimated that 10 million people were infected with HIV (Rathus & Boughn, 1994). In 1994, WHO estimates indicated that 14 million people were infected with HIV. By the end of June 1996, the World Health Organization (WHO) estimated that 28 million people worldwide were infected with HIV (Republic of Kenya, 1997).

Available data indicates that HIV infections have continued to increase at an alarming rate especially amongst the youth in many developing countries. "In many parts of [the] developing world, the majority of new infections occur in young adults, with young women [being] especially vulnerable. About one-third of those currently living with HIV/AIDS are aged 15-24" (UNAIDS/WHO, 2001a, p. 3).

"At the end of 2001 an estimated 40 million people globally were living with HIV" (UNAIDS/WHO, 2001a, p. 3). Of these, 40 million cases, 5 million were new infections, which occurred in the year 2001. UNAIDS/WHO (2001a) data breakdown given in table I shows the distribution of the 40 million HIV/AIDS

Table 1

## Regional HIV/AIDS statistics and features end of 2001

Region	Epidemic started	Adults find children living with HIV/AIDS	Adults and children newly affected with HIV	Adult prevalence rate (*)	Percentage of HIV positive adults who are women	Main mode(s) Of transmission for adults living with HIV/AIDS
Sub-Saharan Africa	Late '70s Early '80s	28.1 million	3.4 million	8.4 %	55%	1hetero
North Africa & Middle East	Late '80s	440 000	80 000	0.2 %	40%	1 hetero, IDU
South & South-East Asia	Late '80s	6.1 million	800 000	0.6 %	35%	1 hetero, IDU
Fast Asia & pacific	Late '80s	1 million	270 000	0.1 %	20 %	IDU, 1 hetero, MSM
Latin America	Late '70s Early '80s	1.4 million	130 000	0.5 %	30%	1 hetero, IDU
Caribbean	Late '70s Early '80s	420 000	60 000	2.2 %	50 %	IDU
Eastern Europe & Central Asia	Early '90s	1 million	250 000	0.5 %	20 %	MSM, IDU
Western Europe	Late '70s Early '80s	560 000	30 000	0.3 %	25 %	1 hetero, IDU
North America	Late '70s Early '80s	940 000	45 000	0.6 %	20%	MSM, IDU, 1hetero
Australia & New Zealand	Late '70s Early '80s	15 000	500	0.1 %	10%	MSM
TOTAL		40 million	5 million	1.2%	48%	

Note, \*The portion of adults (15 to 49 years of age) living with HIV/AIDS in 2001, using 2001 population numbers. Hetero- heterosexual transmission. IDU- transmission through injecting drug use. MSM- sexual transmission among men who have sex with men.

Source: UNAIDS/WHO 2001a, p. 3

cases and that of the new infections in each of the 10 regions. It also gives the main mode of transmission for each of the regions.

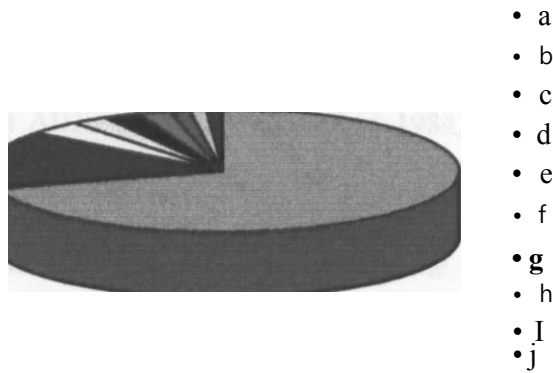
The statistical figures by UNAIDS indicate that as at the end of 2001, Sub Saharan Africa was leading with a total of 28.1 millions adults and children living with HIV/AIDS. The adult prevalence rate in this region was 8.4%. North America where the disease was first reported had 940,000 people living with HIV/AIDS. The prevalence rate here was 0.6%. West Europe had 560, 000 cases with a prevalence rate of 0.3%. Australia and New Zealand region had the lowest number of HIV/AIDS cases with only 15, 000 adults and children living with HIV/AIDS. The adult prevalence rate here was 0.1%.

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In Sub-Saharan Africa, the number of adult women infected with HIV was greater than that of adult men by 5%. HIV infection was also greater in teenage girls than in teenage boys. Here (Sub-Saharan Africa), "the HIV infection rate among teenage girls [was] five times the rate amongst teenage boys" (UNAIDS & The Fanos Institute, 2001 p. 9).

According to the UNAIDS/WHO (2001a) report, 3.4 million of the total 5 million new infections were in sub Saharan Africa. This figure is enormous as compared to North America, Western Europe and New Zealand and Australia, which had 45,000, 30,000 and 500 new infections respectively. Figure I illustrates the percentage number of new infections in each of the 10 regions in the year 2001. With 5 million new infections in the year 2001 only, one cannot avoid questioning the effectiveness and efficiency of the HIV/AIDS awareness campaigns going on in the countries where the HIV infection rate is still high.

**Figure 1. The portion of adults (15 to 49 years of age) living with HIV/AIDS in 2001, using 2001 population numbers.**



**KEY**

a - Sub-Saharan Africa

b - North Africa &  
Middle East

c - South & South-East  
Asia

d - East Asia & Pacific

e - Latin America

f - Caribbean

g - Eastern Europe &  
Central Asia

h - Western Europe

I - North America

J - Australia & New

Zealand\*

Note. The Australia and New Zealand portion is too small and may not be noticed easily in the chart.

**Source of information:** *UNAIDS and WHO, 2001a*

Going by the figures released by the Kenyan government on the nation wide HIV/AIDS status, Kenya is definitely one of the countries where there has been an escalation of HIV/AIDS cases. Kenya is adversely affected with HIV/AIDS. Since the first AIDS case was reported in 1984, more than 2 million people have been infected. An estimated 200,000 Kenyans died of AIDS between 1984 and 1995 (Republic of Kenya, 1997). In 1997 the Kenyan Government projected that the number of deaths due to AIDS among people aged 15-39 years in Kenya during the period 1995-2000 could be three times the number of deaths due to all other diseases combined (Republic of Kenya, 1997). The projection seems to have been confirmed by the government's announcement that above half of the beds in most hospitals are currently occupied by AIDS patients,

## **2.7 The Science of HIV/AIDS**

### **2.7.1 The Cause of AIDS**

AIDS is caused by a retrovirus called Human Immunodeficiency virus (HIV) (Workman, Ellerhorst-Ryan & Ilargrave-ko-ertge, 1993). Other names that had been given to this virus in the past include human T lymphotropic virus type III (HTLV III), lymphadenopathy- associated virus (LAV), and AIDS-associated retrovirus (ARV)(Frenay & Mahoney, 1991).

HIV belongs to the family *Relroviridae* (Sim & Jeffries, 1990) and subfamily *Ientivirinae*. Other subfamilies in the family *Relroviridae* are *oncovirinae* and *spumavirinae*. Other common retroviruses include simian immunodeficiency virus (SIV), caprine arthritis encephalitis virus (CAEV) and equine infectious anaemia virus (EIAV). SIV infections are "widespread in green monkey in sub-



Saharan Africa" (Sim & Jeffries, 1990, p. 4). SIV induces an immunodeficiency syndrome and neurological abnormality in macaques.

There are two main types of HIV: HIV type one (HIV-1) and HIV type 2 (HIV-2) (Moss 1992; Rathus & Bough, 1994). HIV-1 is the virus that was originally isolated and identified to be causing AIDS by the Pasteur group in 1983 (Rathus & Bough, 1994). A different type of HIV (now called HIV-2) was isolated for the first time in 1986 from a patient in West Africa (Sim & Jeffries, 1990). The names HIV-1 and HIV-2 were used to differentiate these two types of HIV.

HIV-1 is more prevalent than HIV-2 and is therefore recognised as the major cause of AIDS in most parts of the world (Moss, 1992). HIV-2 is however common in Western Africa. HIV-2 has been noted in few other places in the world such as Central Africa, Eastern Africa and Southern Africa (Hubley, 1990).

Both HIV-1 and HIV-2 have a number of subtypes. Some HIV-1 subtypes include HIV-1 subtype A and D (Qwinn, Wawer & Sewankambo, 2000). The effect of both HIV-1 and HIV-2 on the human body is almost similar. Both ultimately lead to the development of the AIDS condition (Hubley, 1990). AIDS is characterised by an almost total collapse of the body's immune system that leaves its sufferer susceptible to opportunistic infections against which the body is unable to defend itself (Frenay & Mahoney, 1991). For the purpose of further discussion herein, HIV will be used to denote all types and subtypes of HIV.

HIV is a very small RNA virus that can only be seen with the help of an electronic microscope. It is roughly spherical with a diameter of 1/10,000 of a millimetre (100nm). Its structure is very simple with an outer coat or envelope made of a lipid bilayer membrane, which consists of two kinds of special molecules called

glycoproteins labeled GP 120 and GP 41. This outer coat covers a core made up of proteins labelled P 18 and P 24. The core contains two identical molecules of single stranded RNA. It is within the core that important genetic materials (genome) of the HIV and the enzyme reverse transcriptase are found (Hubley, 1990; Sim & Jeffries, 1990).

HIV has only RNA as its genetic material (Hubley, 1990; workman, et al., 1993). A unique difference between retroviruses (HIV included) and other viruses (non-retroviruses) is the presence of a special complex enzyme called *reverse transcriptase* within the RNA of a retrovirus. This *reverse transcriptase* enzyme plays an important role in the replication of HIV (Workman, et al., 1993). Specific genetic materials that play an important role in the life and functioning of HIV include the *gag*, *pol* and *env* genes (Sim & Jeffries, 1990).

### **2.7.2 Transmission of HIV**

HIV is present in various human body fluids of infected individuals. It can be detected in blood serum, semen, vaginal secretion, breast milk and saliva (Hubley, 1990; Moss, 1992; Sadker & Sadker, 1998). It is also present in body tissues and organs, the cerebro-spinal fluid in the spinal code and in the brain and can sometimes be found in tears (Hubley, 1990). HIV is transmitted by an exchange of some of these body fluids from an HIV positive person to HIV negative person. Blood serum, semen and vaginal secretion contain the virus in sufficient quantities to cause HIV transmission (Moss, 1992). Breast milk has also been documented to cause HIV transmission to breast-feeding babies whose mothers are infected with HIV (UNAIDS, 2002, July). Though HIV is present in saliva, 'the concentration of HIV in saliva is very low for it to cause infection. The HIV is also probably

inactivated by saliva (Hubley, 1990). Sweat and tears have not been documented to transmit HIV infection.

Only body fluids with a viral load that is significantly high (adequate) can bring about transmission when they are transferred from an HIV infected person to an HIV free person. There are a number of ways in which these fluids can be transferred to cause HIV infection. These ways are referred to as modes of HIV transmission. Workman, et al. (1993) group these modes into three main categories: sexual transmission, mother to child transmission and blood transmission.

Sexual transmission of HIV usually occurs during sexual encounters. Homosexual encounters (anal sex), heterosexual encounters oral sex. Lesbianism and mutual masturbation are the possible sexual activities that may lead to HIV transmission. Penetrative sexual encounters especially heterosexual and homosexual encounters where there is an exchange of semen or blood have a relatively higher risk of HIV transmission than the rest (Hubley, 1990; Workman, et al., 1993), Homosexual encounters have the highest risk of transmitting HIV. This is because the rectum has a delicate lining that can be punctured easily by the penis to release blood. This creates an environment that precipitates HIV infection if one of the sexual partners is infected (Hubley, 1990),

Heterosexual sex is presently the most common route through which HIV is transmission (UNAIDS/WHO 2001a; Workman, et al., 1993). Heterosexual encounters where there is no use of condoms have a considerably high risk of HIV transmission. One such single heterosexual encounter between an HIV infected person and an HIV free person can lead to the transmission of the virus (Hubley, 1990). Various research findings have revealed that not all unprotected (without use

of condoms) heterosexual encounters with HIV infected persons result to HIV transmission. A research carried out in Rakai district in Uganda made the following conclusion: "The viral load is the chief predictor of the risk of heterosexual transmission of HIV-I, and transmission is rare among persons with levels of less than 1 500 copies of HIV-I RNA per milliliter" (Quinn, Wawer & Sewankambo, 2000, p. 921).

Epidemiological studies in Kenya have identified some of the factors that increase chances of heterosexual transmission. These are uncircumcision in men, oral contraceptive use in female, the presence of genital ulcers in both sexes and presence of non-ulcerative sexually transmitted diseases such as gonorrhoea and chlamydia (Bellavance, 1996). Hubley (1990) explains that the high risk of HIV transmission in uncircumcised males may be as a result of HIV being retained in the folds of their foreskin during sexual intercourse. One's sex also influences his/her vulnerability to HIV infection. Women are 'far more vulnerable' to HIV infection than men because "their bodies offer less physiological resistance to contracting HIV, and socially their status and gender role puts them at greater risk from the virus" (UNAIDS/the Panos Institute, 2001, p. 9).

Oral sex is sex in which the tongue of one partner is brought into contact with the penis or vagina of the other so as to stimulate it (Hubley, 1990). Oral sex is a low risk sexual activity. The risk of HIV transmission through this form of sex however increases if there are wounds in the mouth or in (or on) the sexual organs. In this case, semen, vaginal fluid or saliva might end up transmitting the virus through the wounds. Lesbianism (female homosexual) and mutual masturbation are

low risk sexual activities. There may be a slight risk with both if parts that come in contact with each other have wounds on them.

Sex with a condom and wet kissing (deep or tongue kissing especially if there are no cuts in the mouth) are low risk sexual contacts. Massaging and dry kissing have no risk at all unless there are openings on the skin through which infected body fluids (especially blood) can be exchanged (Hubley, 1990).

Mother to child transmission can occur during pregnancy (prenatal transmission) or during birth or after birth (postnatal transmission) (Moss, 1992). Prenatal transmission is the most common route of HIV transmission among infants. During pregnancy, HIV can be transmitted to the child through the placenta. "Because viruses are so small, they easily cross the placenta from the mothers blood to the fetus" (Workman, et al., 1993, p. 85).

HIV transmission is also likely to occur during birth especially during vaginal delivery. The contact between the baby's membrane and the mother's blood as the baby passes through the vaginal tract is what may lead to HIV infecting the baby (Workman, et al., 1993).

Postnatal transmission may occur through breast-feeding of the child with HIV infected breast milk. Though the amount of virus in milk is low, the low concentration can result to transmission because the frequency of exposure is very high (Hubley, 1990; Workman, et al., 1993). Flaskerud & Ungverskij (1995) however note that proving direct transmission of HIV through breast milk is difficult and that conflicting results indicate that transmission does occur but it is impossible to definitively point out breast-feeding as the sole factor. Hubley (1990) also notes that although there is a possibility of transmission through breast-feeding,

the risk is low. He adds, "It is unfortunate that publicity has been given to scare stories about transmission of HIV through breast-feeding. Anxious parents should be reassured of the very low risk of transmission of HIV from breast feeding" (p, 31). In the light of the low risk of transmission through breast milk. World Health Organisation (WHO) recommends that HIV antibody positive mothers should breast-feed their babies whenever possible (Hubley, 1990).

Blood transmission occurs when there is direct or indirect blood contact between HIV infected blood/blood products and HIV free person(s). "Blood borne transmission of HIV accounts for up to 10% of HIV infections in countries with limited resources" (UNAIDS/WHO, 2001b, p. 34),

Transmission through direct blood contact occurs especially during transfusion of infected blood and through "subcutaneous (or deeper) exposure to sharp objects (e.g. needles) which contain the blood of infected individual" (Workman, et al., 1993, p. 86). Transmission through blood transfusion is currently rare since most of the blood used is screened for HIV. Contaminated blood products such as factor 8 (which is used by haemophiliacs) were in the past a significant source of HIV infection. Treatment of this product with heat before using them has minimised transmission through this mode. Use of unsterilised contaminated sharp instruments (e.g. knives, needles, etc) during circumcision, tattooing and other practices that involve piercing of the skin can lead to HIV transmission (Panos Dossier Institute, 1988; Hubley 1990).

Transmission through indirect blood contact "involves the blood of an infected person coming in contact with the skin or mucous membrane of an infected individual" (Workman, et al., 1993, p. 86). Presence of points of weakness (e.g.

bruises, wounds etc) in these regions precipitates entry of HIV. Infection through this route may occur for example when one is handling a bleeding accident victim or during any other incidence that may lead to blood spilling from an infected person to an opening in the skin (e.g. an undressed wound) of the other person.

Transmission through artificial insemination (AI) has been documented (Flaskerud & Ungvarskij, 1995). So far there is no procedure that reliably eliminates HIV from semen. The Center for Disease Control (CDC) therefore advises against AI when the donor is infected with HIV (Flaskerud & Ungvarskij, 1995). Donated tissues and organs may also transmit HIV since they contain HIV infected blood cells (Hubley, 1990; Moss, 1992). Organ donors should therefore be screened to ensure that organs of only those who are HIV free are transplanted.

Some people have speculated other ways through which HIV is transmitted other than the ones discussed above. Some of these speculated routes include insect (e.g. mosquito) bites, casual contact and contact with feces and urine from HIV infected persons. These speculations are erroneous since these three are generally not possible routes of HIV transmission as explained here below.

WHO gives three reasons that support the assertion that insects (particularly mosquitoes) do not transmit HIV. These are:

- I) The amount of virus in the blood that the mosquito takes is too small to enable re-infection. Furthermore HIV does not replicate in the mosquito unlike the malaria causing parasites, which replicate to increase the infection dose before it is transmitted through mosquito bites.

- 2) If HIV would be insect borne, people of all ages (including children between the ages of three and fourteen who are rarely infected by AIDS but commonly suffer from malaria) would be almost equally infected.
- 3) Diseases that are insect-transmitted normally result in all family members being exposed to such infection. Studies of AIDS and HIV in families have shown that HIV infection does not follow the pattern of insect transmitted diseases. It is the sexual partner of the AIDS patients who is usually at risk of being infected and not the other members (Hubley, 1990),

Casual contact through hand shakes, hugging, sharing toilet seats, drinking from communion chalices, sharing swimming pools, handling of infected people's clothing and sharing of towels and utensils cannot transmit HIV. This is because the skin forms a natural barrier to entry by HIV. Contact with feces and urine cannot lead to HIV infection since the two do not possess HIV except in cases of dysenteries that result in feces with blood (Hubley, 1990),

Coughs and sneezes cannot transmit HIV. This is because HIV is not as infectious as other viruses such as those that cause common cold or influenza. HIV is a delicate virus, which is not able to withstand the buffeting in air. Artificial heating, sunrays and drying also easily kill HIV (Hubley, 1990).

In view of the above facts, those coming into frequent contact with persons living with HIV (PLWHIV) need not be afraid of being infected by HIV through casual contact since there is no real risk of infection through this route. It is sexual partners of infected persons who have the real risk of contracting HIV especially through 'unprotected' sexual intercourse (Hubley, 1990). Persons living with those with HIV/AIDS or those caring for AIDS patients should however take the



necessary precautions to preclude HIV infection. These precautions include avoiding sharing of piercing and cutting instruments such as razor blades and needles. They should also avoid sharing toothbrushes. A hot wash with plenty of detergent should be used to wash soiled cloths of AIDS patients (especially those with fresh bloodstains) since this destroys HIV (Moss, 1992),

### **2.7.3 HIV Infection and Replication**

HIV infects human cells after it has gained entry into the body. Infection of the host's cell by the virus precedes its replication. During infection, the "HIV recognises and is able to attach itself to a molecule called CD4 present on the walls of T<sub>4</sub> lymphocyte cells" (Hubley, 1990). After infection of the host's cells, the virus' reverse transcriptase enzyme complex plays an important role in the replication process.

During replication, "the reverse transcriptase forces the host's DNA synthesis mechanism to use the viral RNA as a template or pattern and to synthesise a new piece of human DNA exactly complementary to the viral RNA" (Workman, et al., 1993, p.84). In this way the enzyme assists in the conversion of the viral RNA into human DNA Which is then incorporated successfully into the gene of the host cell (the hosts cellular DNA) (Hubley, 1990; Workman, et al., 1993). Workman, et al., (1993) give the following explanation on why HIV successful incorporation itself into the host's cellular DNA:

Because the new piece of DNA is human rather than viral, although it carries the code of viral protein, the new DNA is more likely to be incorporated into the cellular DNA without damaging the normal reading

sequence or activity. In addition, because the new DNA is technically human, it does not arouse some host defenses (p. 84).

The new DNA may remain inactive for a lengthy duration of time. When the host cell replicates, the virus DNA is also copied. The virus will remain in the host's cell for a long time and cannot be eliminated (Workman, et al., 1993). "At some later stage some event, which is not well understood by scientists triggers the host's T<sub>4</sub> cells to produce HIV virus" (Hubble, 1990, p. 10). It is however clear that synthesis of a large number of viral particles occurs only after the new DNA has been actively transcribed during the replication process (Workman, et al., 1993). The new HIV viral particles leave the infected cell through the process of budding of the cell or through lysis of the cell or by moving through the cell membrane.

#### **2.7.4 HIV and the Body's Immunity System**

The body's immunity system entails all the defence mechanism that the body uses to protect itself against disease causing micro-organisms and against effects of an injury. Human immunity system consists of innate immunity and acquired immunity. Innate immunity is the immunity that one is born with. It is genetically determined and is not developed after birth. It is not an adaptive response to injury or invasion by antigens (foreign proteins) (Frenay & Mahoney, 1991; Workman, et al., 1993). An antigen is "a molecule on its own or a disease-causing organism which is capable of reacting with the immune system" (Hubble, 1990, p. 12).

Acquired immunity is the immunity that is developed by the body as an adaptive response to injury or invasion by antigens. It provides human with protection against the side effects that can accompany invasion and injury. Acquired

immunity is either active or passive and can be acquired either naturally or artificially (Workman, et al., 1993).

Quite a number of foreign bodies (pathogens and other disease causing agents) have the potential of attacking and causing disease in human beings. These include bacteria, protozoa, viruses, moulds, spores, pollen grains, and foreign plant and animal cells. These sometimes and more frequently attack and penetrate into the body's internal system. They however do not cause disease most of the time in immuno-competent persons since their immunity system fights and eliminates them effectively using various functional mechanisms which are under the control of leukocytes (white blood cells) (Workman, et al., 1993).

Leukocytes can be classified into different subtypes on various bases. Workman, et al., (1993) classify leukocytes on the basis of their appearance into two main groups: granulocytic leukocytes and nongranulocytic leukocytes. Granulocytic leukocytes have granules (called lysosomes) and vesicles within their cytoplasm, which give them a rough appearance when viewed under a microscope. Eosinophils (acidophils), basophils and neutrophils are the main subtypes of granulocytic leukocytes. These three make up 1-2%, 0.5% and 55-70% of the total number of leukocytes respectively.

Nongranulocytic leukocytes have a smooth appearing cytoplasm when viewed under a microscope. All lymphocytes fall in this group. Lymphocytes are divided into two: B-lymphocytes and T-lymphocytes. B-lymphocytes and T-lymphocytes form 25-30% of the total leukocyte count. They have various subsets that participate in anti-body mediated immunity and cell-mediated immunity. Monocytes and macrophages have also been classified in this group though they

contain some amounts of lysosomes. These two form 2-4% of the total leukocyte count.

Leucocytes are the actual immune-system cells. They protect the body against the side effects of invasion by foreign bodies in various ways. Workman et al. (1993) identify the following as some of the ways in which leucocytes provide protection:

- 1) Recognition of self versus non-self.
- 2) Phagocytotic destruction of foreign invaders, cellular debris and unhealthy self-cells.
- 3) Lytic destruction of foreign invaders and unhealthy self-cells.
- 4) Production of antibodies directed against foreign invaders.
- 5) Stimulation of complement activity.
- 6) Production of chemicals that stimulate increased formation of leukocytes by bone marrow.
- 7) Production of chemicals that increase specific leukocyte growth and activity (p. 8)

Different subtypes of leukocytes perform different functions in the immunity system. Some of the functions may overlap but each leukocyte type is specialised to perform a specific function or specific functions.

Workman, et al. (1993) categorise human immunity into three broad functional divisions: cell-mediated immunity, antibody mediated immunity and inflammatory responses. Each of these responds in a unique way to defend the body against invasion or injury. All the three are vital in the body's defence and they

interact with one another considerably. The functioning of each of these three is discussed below.

#### **a) Cell mediated immunity**

Cell mediated immunity is a vital division of the immune system which involves direct intervention of some of the leukocytes. T lymphocytes are the main leukocytes involved here. Three T lymphocytes subsets are critically important in the development and continuation of cell mediated immunity. These are the helper/inducer T lymphocytes cells, the suppressor T lymphocytes cells and the cytotoxic T lymphocytes cells. Each of these plays a unique role in cell-mediated immunity (Workman, et al<sub>M</sub> 1993).

Helper/inducer T lymphocytes cells are commonly called T4 cells because its cell membrane contains a protein known as T4 protein. Its other names are CD4 (short for cluster of differentiation 4) cells, OKT4-positive cells and Leu 3-positive cells (Workman, et al., 1993). These cells are very efficient at recognising self versus non-self after antigen processing. After this recognition, they then stimulate the various squads of leukocytes involved in inflammatory, antibody and cellular defence action to destroy, eliminate or neutralise antigens (Workman, et al., 1993).

HIV usually infects and destroys CD4 cells thus making the functioning of the immune system incompetent. The destruction of the CD4 cells is gradual. When HIV has successfully destroyed these cells to a CD4 cell count level below 400 per cubic millilitre of blood, the result is an immunodeficiency condition in a Person Living with HIV (PLWHIV) (Moss, 1992). Such a person becomes immunocompromised and is often attacked by opportunistic infections. If HIV destroys these cells to a CD4 cell count level below 200 per cubic millilitre of

blood, there is an increased risk of developing AIDS. Most specialists would recommend use of anti-retroviral drugs and other forms of HIV treatment to PLWHIV when a CD4 cell count level falls below 200 (Flaskerud & Unguarskij 1995; Rathus & Boughn, 1994).

Suppressor T lymphocytes cells are commonly called T<sub>s</sub> cells or CD8 because they contain a T<sub>8</sub> lymphocyte antigen. These cells play regulatory role in the cell-mediated immunity. Their primary function is to prevent the occurrence of continuous overreaction in response to exposure to non-self cells or antigens. They do this by opposing the activities of the CD4 cells. The CD8 cells' function is regulatory in that it prevents development of autoimmune diseases, which usually arise as a result of the formation of autoantibodies directed against normal healthy self-cells (Workman, et al., 1993). A balance between the CD8 cell activity and CD4 cell activity needs to be maintained for the cell-mediated immunity to function at its optimal. The balance is usually provided when the CD4 cells outnumber the CD8 cells by a ratio of 2 to 1. A ratio higher than this will result to an overreaction that will lead to tissue damaging. A lower ratio than the normal (2:1) will result to suppression of the immune system, which will lead to one's vulnerability to invasions, and infections of all types (Workman, et al., 1993).

Cytotoxic T lymphocytes cells are also called cytolytic T cells or T<sub>c</sub> cells or CTL cells. They are positive for the presence of CD8 and may therefore be considered as a subset of CD8 cells. They function in cell mediated immunity by undertaking lysis/destroying of cells that contain a processed antigen called major histocompatibility complex (MHC) (Workman, et al., 1993).

Natural killer cells are a special type of leukocyte population that has some T Lymphocyte characteristics but they are not usually considered to be true Lymphocyte subsets. These cells play an important role of destroying unhealthy self-cells (cell infected by pathogen e.g. virus) and abnormal self-cells (mutated cells e.g. the cancer cells) (Workman, et al., 1993).

Macrophages, eosinophils (acidophils), neutrophils and monocytes are also involved in Cell mediated immunity. These mononuclear phagocytes play an important role of synthesising important protein hormones called cytokines. Cytokines play a role of inducing and/or regulating the wide variety of inflammatory and immune responses of cell-mediated immunity. Without the optimum functioning of cell-mediated immunity, there will arise an immune deficiency (Workman, et al., 1993).

#### **b) Antibody-mediated immunity**

Antibody-mediated immunity (formally called humoral-mediated immunity) is a very specific type of acquired immunity that involves antigen-antibody reactions. Its action primarily involves antibody-antigen interactions, which are aimed at neutralising or eliminating or destroying antigens (substances which contain foreign proteins). Antibody-mediated immunity can occur either naturally (without human intervention) or artificially (with human intervention) and is either active or passive (Workman, et al., 1993).

Active immunity is the type of immunity where the body takes an active part in synthesising antibodies in response to invasion by antigens. Active immunity can be naturally or artificially induced. The main difference between natural active immunity and artificial active immunity is that in the former the body produces

antibodies in response to antigens that enter the body naturally (without human assistance) whereas in the latter the body produces antibodies in response to antigens that enter the body by human assistance. Naturally introduced antigens that bring about artificial active immunity include killed vaccines (actual pathogens that have been killed), attenuated (weakened) viruses or bacteria and toxoids (poisonous substances produced by antigens/pathogens) (Workman, et al., 1993).

Passive immunity is attained when antibodies acting against a given antigen are introduced to the body from an outside source, which can be another person or animal. This immunity provides only a short-term protection against specific antigens since the antibodies are eliminated gradually by the body defence system, which identifies them as "foreign" substances. Natural passive immunity is attained when the mother passes antibodies to the foetus through the placenta during pregnancy or to the infant through breast milk during breast-feeding. Artificial passive immunity is attained when antibodies from different sources are deliberately introduced into ones body through injections or oral means (Workman, et al., 1993).

B-lymphocytes are the key players in antibody-mediated immunity. This cells cannot however function optimally on their own because they have limited specific functions and are at the same time not efficient in recognising and differentiating between self and non-self. They therefore require the assistance of other cells such as macrophages and helper T-cells (CD4 cells) cells without which initiation and completion of antigen-antibody action will be defective. Helper T-cells are specifically vital here because they secrete products, which regulate the activity of B-lymphocytes and assist in recognition of non-self. A malfunctioning of



Helper T-cells will thus lead to a malfunctioning of the entire division of the antibody-mediated immunity

When the B-lymphocytes become sensitised of the presence of a specific antigen in the body, they synthesise specific antibodies that are directed specifically against that protein. It is these antibodies rather than the actual B-lymphocytes, which interact with the antigen, and either neutralises or eliminates or destroys it.

There are five main types of antibodies namely immunoglobulin A (IgA), immunoglobulin G (IgG), immunoglobulin E (IgE), immunoglobulin M (IgM) and immunoglobulin D (IgD). Of all these immunoglobulin G (IgG) is the most abundant and it is the only one that can cross freely in substantial amounts from the mother to the foetus through the placenta. Placental transfer of IgG is responsible for the natural passive immunity in new-born babies. Essential information on some aspects of these antibodies is summarised in table 2.

### c) Inflammatory responses

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Inflammatory responses are non-specific body defences against the side effect of injury or invasion. These responses are also involved in the neutralisation, destruction and elimination of invading pathogens. Neutrophils, basophils, eosinophils and macrophages are the leukocytes cells responsible for generating inflammatory responses. The responses usually result to tissue actions that bring about observable and often uncomfortable symptoms. Inflammatory responses unlike cell-mediated and antibody-mediated immunity do not have the ability of "remembering" the Universal Product Code of an invader or injury organism. They thus provide only an immediate and short-term protection against the effects of a

**Table 2****Essential Information on Antibodies**

<b>NAME OF ANTIBODY</b>	<b>APPROXIMATE MOLECULAR WEIGHT</b>	<b>SITE PRESENT/SITE OF ACTION AND FUNCTION</b>
Immunoglobulin A (IgA) /sccrclory immunoglobulin	155.0(H)	Moves from blood into various body fluids; present on the outer body surface where it prevents entry of antigens into the internal environment.
Immunoglobulin i (lg(i))	180,000	Present in blood and other extracellular fluids; binds to antigens so as to allow phagocytosis by neutrophils and macrophages.
Immunoglobulin F. (IgP.)	180,000	Present in blood and body fluids; function unclear but is immunologically useful during parasitic infestation.
Immunoglobulin M (IgM)	180,000	Present in blood; thought to be involved in the initiation of autoimmune responses.
Immunoglobulin D (lgI)/mystery protein	180,000	Pound in plasma but not in serum; function is not clear.

Source of information: Workman, ct al., (1993)

foreign invader or injury. Regardless of their short-term effect, inflammatory responses are vital for the optimum functioning of the entire human immunity system. About the importance of inflammatory responses Workman, et al., (1993) say, "without proper function of the inflammatory process, people are at grave risk of succumbing to the effects of tissue injury and invasion by overwhelming numbers of micro-organisms" (p. 14)

Although HIV mainly targets the CD4 cells, which are important components of cell-mediated immunity, it affects the entire body immune system since as it is evident from the foregone discussion all the three functional divisions of human immunity need to interact well for optimum body protection. They greatly depend on each other for their proper functioning.

### **2.7.5 HIV Testing**

It is not possible to diagnose presence of HIV virus without the use of scientific tests. Quite a number of tests have been developed to determine one's status in relation to HIV infection. Springhouse Corporation (1995) groups these tests into two broad categories: HIV antibody tests and direct HIV tests.

HIV antibody tests are the most commonly performed tests. These antibody tests indicate HIV infection indirectly by revealing the presence of HIV antibodies in one's body (Springhouse Corporation, 1995). HIV antibody tests that are commonly used include enzyme linked immunosorbent assay (ELISA) test, western blot test and immunofluorescence assay. The recommended protocol in HIV antibody tests requires the blood or blood products being screened to be tested initially with an enzyme linked immunosorbent assay (ELISA) test. "A positive ELISA test should be repeated and then confirmed by an alternative method usually

the western blot or immunofluorescence assay" (p. 117). The presence of HIV antibodies (anti HIV antibodies) makes one HIV positive (or seropositive).

HIV antibody tests are not always reliable because human body can take some considerable time to produce a detectable level of antibodies. The time period from infection to development of detectable levels of antibodies is called 'windows' period (Springhouse Corporation, 1995). 'Windows' period varies from a few weeks to as long as 35 months. During this period, an HIV infected person tests negative for HIV antibodies thus making an HIV antibody test ineffective (Sim & Jeffries, 1990). HIV Antibody tests are also unreliable in neonates because transferred maternal HIV antibodies may persist for 6-10 months or more even if the child does not have HIV infection (Moss, 1992). An HIV antibody test of a baby within the first year might therefore give a false HIV positive status especially if the mother was HIV positive during pregnancy.

Direct testing of the presence of HIV is more reliable and accurate than the HIV antibody test. It is however an expensive and difficult technique (Panos Dossier Institute, 1988). Tests used in direct testing include "antigen tests (P24 antigen), HIV cultures, nucleic acid protein of peripheral blood lymphocytes and the polymerase chain reaction" (Springhouse Corporation, 1995, p. 123).

Other HIV tests that have been developed for use include HIV CHEK. (developed in USA), Haemagglutination test (developed in USA) and Karpus cell test (developed in Japan) (Panos Dossier Institute, 1988). Additional tests to support the diagnosis and help evaluate the severity of immunosuppression resulting from HIV infection include the CD4+ and CD8+ T-Lymphocyte subset counts,

erythrocyte sedimentation rate (ESR), serum beta2-microglobulin, complete blood cell count, neopterin levels and anergy testing (Springhouse Corporation, 1995).

Whichever HIV test one uses, an HIV-positive result does not mean someone has AIDS. An HIV test is therefore not an 'AIDS test', though it is mistakenly referred to in this way (Panos Dossier Institute, 1988).

Pre-test and post-test counselling is a vital aspect of HIV testing. Pre-test counselling should be done to prepare one to receive the result of the test in a positive manner whatever the result is. Post-test counselling should be done to all who have undertaken the HIV test to enable them come into terms with the outcome of their test. Those with HIV positive results should be counselled on how to live positively with the HIV condition. Those who have tested HIV negative should be counselled on how to live HIV free lives by avoiding risky behaviours (Moss, 1992).

The Kenyan government has taken the initiative of putting up various voluntary counselling and testing (VCT) centres for the purpose of counselling and testing those who volunteer to take HIV tests. The VCT centres are expected to make a vital contribution in the control of the spread of HIV.

#### **2.7.6 Progression of HIV/AIDS**

HIV attacks and impairs the human body's immune system especially the white blood cells, leaving the victim vulnerable to opportunistic infections. It does this progressively. The stages through which HIV progresses before it causes death in its 'victim' have been classified in various ways by various authorities. KIE (1997c) identifies four stages through which HIV infection progresses:

- a) Stage I- Window period: This is the time it takes the immune system of the body to produce detectable levels of HIV antibodies after the HIV has entered the body (KIE, 1997c; Springhouse Corporation, 1995), This period can last as long as 35 months (Springhouse Corporation, 1995).
- b) Stage II- Incubation period (Asymptomatic period): this is the duration during which HIV live 'silently' inside the body's Helper T cells. This period can last from six months to ten years in adults. Incubation period for children is much shorter because their immune system is not yet fully developed. During this period the infected person will be seropositive but he/she may have no HIV related symptoms,
- c) Stage III- Symptomatic stage: this is the stage during which symptoms begin to show because HIV has begun to break down the body's immune system,
- d) Stage IV- Full Blown AIDS: this is a stage reached when HIV has damaged the body's immune system so severely to an extent of rendering its resistance to opportunistic diseases ineffective.

The American Centres for Disease Control (CDC) have classified progression of HIV/AIDS in people infected with HIV into four main groups, which can also be considered as the stages of progression HIV (Moss, 1992). These are:

- a) Group 1- Acute infection: this is a group that is characterised by seroconversion illness, which ranges from a flu-like illness to meningitis or encephalitis. This illness may occur up to six weeks

after infection. It is however by no means invariable, and if it does occur, the patient or the doctor will most often not recognise it.

- b) Group 2- Asymptomatic infection: this group contains HIV infected persons who show no symptoms or signs of HIV infection. Here, serological tests may or may not show abnormalities in the immune function.
- c) Group 3- Persistence generalised lymphadenopathy (PGL): this group is characterised with a condition referred to as Persistence generalised lymphadenopathy (PGL). PGL is a condition in which enlarged nodes that are at least 1 cm in diameter appear in two or more extra-inguinal sites. These nodes persist for at least three months without any current illness or medication known to cause enlarged nodes. Lymphoma may also be noticed in persons in this group. Lymphoma is a single very enlarged node. PGL and Lymphoma may not be a sure indicator of one's likelihood of developing AIDS.
- d) Group 4- HIV disease (AIDS): This group contains a broad spectrum of clinical features (opportunistic infections) related to HIV infection (Moss, 1992).

Generally speaking, the presence of HIV in one's body makes him/her an HIV positive person. AIDS condition develops only when one develops symptoms associated with AIDS. Nearly 100% of all Persons with Human Immunodeficiency Virus (PWHIV) ultimately develop AIDS (Panos Dossier Institute, 1988; Rathus & Boughn, 1994). By itself, HIV does not cause death. It only attacks and weakens the

body's immune system by killing the T<sub>4</sub>(CD4) cells which are vital components of the body's defence mechanism (Workman, et al., 1993). This leaves an AIDS patient's body less protected against invading opportunistic infections such as Tuberculosis, Kaposi's sarcoma, *Pneumonia carinii* pneumonia (PCP), Herpes simplex virus (HSV), Herpes zoster, Candidiasis and Progressive multifocal leukoencephalopathy (PML). Appendix D highlights important aspects of these and other opportunistic diseases/infections that can attack AIDS patients,

AIDS related symptoms vary from one patient to another. The signs and symptoms exhibited by AIDS patients will largely depend on the opportunistic infection(s) they are suffering from at that specific time. For example an AIDS patient suffering from the following opportunistic infections will have the indicated signs and symptoms:

**a) Tuberculosis:** Fever, weight loss, night sweats and fatigue. Dyspnea, chills, hemoptysis and chest pains usually follow these signs,

**b) Kaposi's sarcoma:** Cutaneous and subcutaneous painless nonpruritic tumor nodules that are pigmented and violaceous (red to blue) and are non-blanching and palpable. They may at early stages be mistaken for bruises, purpura or diffuse cutaneous hemorrhages.

**C) *Pneumonia carinii* pneumonia (PCP):** Persistent fever, fatigue and weight loss followed by respiratory symptoms (dyspnea is usually noted initially in exertion and later at rest and cough which is initially dry and non-productive but becomes productive later).



**d) Herpes simplex virus (HSV):** Pain, bleeding and discharge from red blister-like lesions that occur in oral anal and genital areas and may also be found in esophageal and tracheo-bronchial mucosa in AIDS patients.

**e) Herpes zoster:** Small clusters of painful reddened papules that develop along the route of inflamed nerves, which may also be disseminated to involve two or more dermatomes.

**f) Candidiasis:** Thrush (creamy curdlike, yellowish patches surrounded by erythematous base, on buccal membrane and tongue), inflammation and tenderness of nails and/or tissues surrounding the nails and vaginitis.

**g) Progressive multifocal Icucoencephalopathy (PML):** Progressive dementia, memory loss, headache, confusion, and general weakness. Other neurotic complications such as seizures may also be exhibited (Springhouse Corporation, 1995).

Some of the signs and symptoms of some opportunistic infections (e.g. fever, chills, weight loss, sweats, headache, vomiting, general weakness, anorexia, and diarrhoea) are non-specific and are consistent with systemic illness. This makes it hard for one to speculate that he/she is suffering from these infections. Other signs and symptoms such as Progressive dementia, memory loss, and confusion (shown by patients suffering from PML) and loss of vision (shown by people suffering from Cytomegalovirus) are novel. Their novelty might be a possible reason as to why some people deny the existence of AIDS and speculate that those suffering from AIDS might have been bewitched.

### 2.7.7 Prevention and Control of HIV Infection

Various vaccines against HIV are under trial but none has been approved for use (Hubley, 1990; Kenya Medical Research Institute, 2001). With no effective vaccine developed so far, the only sure and safe way of putting the AIDS epidemic under control is by taking measures that will prevent the spread of HIV infections. Such measures include change in sexual lifestyle, proper use of condoms, treatment of sexually transmitted diseases, avoiding unnecessary blood transfusion and screening of blood before transfusion, sterilising of instruments for injecting and piercing procedures and taking measures that ensure prevention of mother to child infection. Most of these measures ensure that one does not come into risky contact with HIV infected body fluids and products (especially blood and blood products and semen or vaginal fluids of HIV infected persons) that may lead to transmission of HIV.

Preventive measures taken in any given situation will depend on the mode through which HIV is likely to be transmitted. Change in sexual lifestyle will reduce (or at best eliminate) the risk of transmission of HIV through sexual contact. Risky sexual lifestyles such as engaging in premarital sex, having multiple sexual partners, involvement in commercial sex (prostitution) and being unfaithful in marriage should be avoided. Abstinence should be encouraged amongst the unmarried youth though it seems unrealistic to many. Hubley (1990) has the following comment to make about abstinence from sex: "Abstinence from sex is the safest way of avoiding infection but is unrealistic for most people!" (p. 36).

Abstinence from sex before marriage may not guarantee one's complete prevention of HIV infection especially if only one of the people who will ultimately

get married to each other practices it while the other does not. There is therefore a need for those intending to get married to undergo HIV antibody tests to ascertain their HIV status before they get married. Two HIV antibody tests three months apart while one abstains from sex or has "safe" sex is the only way of ensuring that the prospective sexual partner is free from HIV (Hubley, 1990),

Proper use of condoms greatly reduces (or at best eliminates) the risk of sexual transmission of HIV. Condoms are thin membrane tubes that prevent sperms or vaginal fluid from coming into direct contact with the reproductive organs of the other person during sexual intercourse (Hubley, 1990). Condoms are usually made of latex rubber or plastic (polyurethane). Condoms can also be made from natural membranes such as the lining of sheep intestine but such condoms can leak and are therefore not as effective as latex condoms (Hubley 1990). Other names commonly used to refer to condoms include rubber, Johnny, durex, gumboots, raincoat and socks (Hubley, 1990).

There are two main types of condoms: male condoms and female condoms. Male condoms are usually made of latex rubber and are used (worn) by the males to cover their penis in order to prevent sperms from entering into the vagina or the anus or the mouth of his sexual partner during vaginal, anal or oral sex respectively (Hubley, 1990).

Female condoms are a relatively new introduction. Their shape is similar to that of male condoms but they are a little bigger (their size is 6 to 7 inches in length and 1 to 2 inches in diameter) and they do not have to be unrolled like male condoms. These condoms have two plastic rings, one at the open end and the other at the closed end. The condoms are placed in the vagina where the plastic rings hold

them. The ring at the open end is fitted over the vaginal opening while the ring at the close end is fitted against the cervix (Rathus & Boughn, 1994),

Female condoms are usually made of plastic (polyurethane) and are used by the females who insert them into their vagina before the commencement of sexual intercourse. These condoms prevent sperms and vaginal fluid from coming into contact with the reproductive organs of both sexual partners. They allow the penis to move freely within the vagina during sexual intercourse. Although female condoms provide protection against STDs (including AIDS), they are not as effective as male condoms. They are also bulky, difficult to use and more expensive than the male condoms. They however give an opportunity to females to choose whether to use or not to use a condom during sexual intercourse relations (Rathus & Boughn, 1994),

Some authors such as Hubley (1990) and Moss (1992) use the term "safe sex" to refer to the use of condoms. Rathus and Boughn (1994) however object the use of the term "safe sex" by arguing that one can only talk of *safer sex* and not safe sex since the use of a condom during sexual intercourse does not render the sexual contact perfectly safe. This might be due to the possibility of the condom breaking/bursting during sexual intercourse.

Hubley (1990) puts the risk of a new condom breaking/bursting at 1%. This risk can increase to as much as 30% if the condom is stored in very hot conditions or exposed to direct sunlight or crushed during stacking or even when it is carried in the back pocket. Such conditions therefore reduce the efficiency of condoms in controlling HIV and STDs (Hubley, 1990),

Other situations that may reduce efficiency of condoms include the following:

1. Use of petroleum based oils such as Vaseline and some types of hand lotions such as Nivea to lubricate them. These may precipitate breaking of condoms. Only water-soluble (water based) lubricants or contraceptive jellies should be used alongside with condoms,
2. Use of expired condoms.
3. Reuse of condoms.
4. Improper wearing (in the case of males) or improper insertion (in the case of females) of the condoms,
5. Improper removal and disposal of the condoms after each ejaculation.

(Hubley, 1990)

Due to the risk chances brought about by the above situations, use of condoms can only loosely qualify to be referred to as '*safer sex*' and not '*safe sex*'.

The combined use of condoms and spermicides containing nonoxynol-a or octoxynol may offer added protection against HIV and other STD causing organisms (Hubley, 1990; Moss, 1992; Rathus & Boughn, 1994). These spermicides can inactivate HIV in vitro thus reducing the risk of its transmission (Moss, 1992).

Immediate treatment of sexually transmitted diseases (STDs) should be encouraged since the absence of STDs reduces the risk of HIV infection. Presence of STDs greatly increase ones chances of being infected with HIV during any one given sexual encounter. This is because STDs such as syphilis and gonorrhoea

provide openings on the sex organs through which HIV can easily pass (UNAIDS, 2002, July).

Direct and indirect transmission of HIV through blood and blood products can be minimised to a negligible level by avoiding unnecessary blood transfusion and unnecessary use of blood products. Where the use of these two is inevitable, the blood should be screened and the blood products sterilised before they are used. This action will reduce chances of HIV infection through this route to a very insignificant level (Hubley, 1990). Blood transfusion should however be avoided as much as possible so as to eliminate the possibility of transfusion of blood that might have given false negative results for an HIV test due to the windows period (Hubley, 1990). Alternatives to blood transfusion such as use of nutritional iron in cases of anaemia should be encouraged. Blood products (such as factor 8 for the haemophiliacs) and instruments for injecting and piercing procedures should be sterilised through heat treatment or any other appropriate techniques to eliminate possibilities of HIV transmission through them.

Mother to child transmission can be totally eliminated if HIV positive mothers avoid getting pregnant. A decision by such mothers not to get pregnant will benefit both the 'would be baby' and the mother. About this issue Hubley (1990) says, "In addition of the risk of producing a baby with AIDS which will certainly die, some researchers believe that pregnancy acts as a trigger which speeds up the process by which HIV positive women progress to AIDS" (p. 45). Notwithstanding this fact, some HIV positive women get pregnant voluntarily or involuntarily.

HIV positive women who choose to be pregnant voluntarily might do it with the hopes that the baby to be born might be HIV negative. They base their hope on

the scientific fact from research work that only about 30 to 40% of the babies born to HIV positive mothers end up developing HIV/AIDS (Nwankwo, 2002, March 8). Such mothers should be advised to take antiretroviral drugs during pregnancy and just before birth since these drugs have been proved to reduce chances of mother to child transmission (UNAIDS/WHO, 2001b). They should also consider the possibility of caesarean birth, which has been proved to minimise the risk of HIV transmission as compared to vaginal birth. After birth such mothers can avoid possible transmission through breast-feeding by boiling the breast milk before feeding it to their babies since it has been proved that heating destroys HIV viruses.

Some HIV positive women might get pregnant involuntarily because they do not know their HIV status. Voluntary HIV testing for all (both male and female) should therefore be encouraged to enable people to make informed decisions as to whether to initiate pregnancy or not.

^^"rUVna^o'IVc^

On the whole all people should be given adequate information on all safe practices that will enable them to avoid activities that will put them at risk of acquiring or transmitting HIV infection (Moss, 1992). This information should encompass a variety of safe practices such as discarding of risky sexual behaviours, use of 'safer sex' and taking precautions to avoid transmission through piercing instruments and other possible modes of transmission. This information should be conveyed to young people in the most appropriate manner. The youth need to hear the information in a language they are likely to understand (such as "tuliza boli") and not in the often-boring dry and scaly statistics and language, which AIDS experts usually use (Musa, 2001, December 13). Provision of information on prevention of the spread of HIV is however on its own not adequate in the fight

against HIV/AIDS (Panos Dossier Institute, 1988). The information provided should therefore be coupled with efforts to develop moral values that are vital in the control of the spread of HIV.

### **2,7.8 Treatment and Management of HIV/AIDS**

So far no HIV/AIDS vaccine or cure has been approved for use. Although there have been claims of existence of some forms of cure, development of an effective HIV/AIDS cure or vaccine is unlikely in the foreseeable future (Panos Dossier Institute, 1988; Moss, 1992). The absence of a cure or vaccine presents very little hope concerning the HIV/AIDS situation. Hope concerning the HIV/AIDS situation is however not totally lost since there has been some considerable success in developing some forms of treatment that can be given to persons living with AIDS with the aim of extending their lives.

Springhouse Corporation (1995) identifies some of the beneficial forms of treatment available for treatment of AIDS patients. These are, the use of antiretroviral drugs, use of immunomodulatory agents, and use of anti-infective and neoplastic agents. Of these three, the use of antiretroviral drugs is the most popular treatment amongst most AIDS patients. A combination of the three will however yield maximum benefit to an AIDS patient.

Anti-retroviral drugs inhibit or inactivate HIV. Most are designed to inhibit proper functioning of the enzyme reverse transcriptase. This stops the process of reverse transcription thus preventing further replication of the virus. Anti-retroviral drugs which are currently in market include Zidovudine (AZT), Didanosine (DDI), stavudine (D4T), Nevirapine (NVP), F.favirenz(EFV) Indinavir (IND), Zalcitabine (DDC), Nellovir, Ritonavir and Saquinavir (Kenya Medical Research Institute,



2001). Zidovudine (AZT) was the first antiretroviral drug to be developed and approved for use. The FDA approved it in 1987 (Rathus & Boughn 1994),

Most of the above antiretroviral drugs are generic drugs and are manufactured by various companies and sold under various brand names. The original forms of these drugs were previously very expensive. The costs have however dropped due to introduction of generics. This drop is however inconsequential to most of the AIDS patients who cannot afford them even at the reduced prices. Details on the cost (as at the date indicated) and other important aspects of antiretroviral drugs available in Kenya are given in appendix E

HIV viruses in some AIDS patients have developed resistance against some anti-retroviral drugs. This has resulted to prescription of a combination of drugs to such patients. Prices of some of the anti-retroviral combinations (as at the date indicated) are listed in appendix F.

Immunomodulatory agents are drugs that are designed to boost the weakened immune system. Their action increases the ability of AIDS patients to fight back opportunistic infections. Anti-infective and neoplastic agents on the other hand are used to combat opportunistic infections and associated malignancies. Some are also used prophylactically to help patients resist opportunistic infections. Though Anti-infective and neoplastic agents are effective in combating many pathogens that cause disease in AIDS patients, their effect is short lived. The infective pathogens often recur after treatment ends. Most AIDS patients will therefore need continuous anti-infective treatment presumably throughout their lifetime (Springhouse Corporation, 1995).

## **2.8 Effects Of HIV/AIDS on Individuals and the Community**

AIDS is a killer disease that has led to unwarranted deaths of many people. It has significantly increased child mortality rate and decreased the average life expectancy. Apart from it causing many deaths, it has also had (and continues to have) other profound effects on the human race more than any other disease in the history of human existence. Its effects presumably surpass those of past plagues such as bubonic plague, small pox, influenza and syphilis. The austere effects of HIV/AIDS are being felt both at the individual and at societal levels.

At the individual level HIV/AIDS affects individual psychologically and physically. Psychological effects arise from the Persistent stigmatisation and discrimination of HIV-infected individuals by other members of the society (Bellavance, 1996). This stigmatisation and discrimination compounded with the fact that almost all those infected with HIV/AIDS ultimately die before long has led to HIV infected people being greatly distressed on learning that they are HIV positive.

Most HIV positive people get overwhelmed with a variety of emotional feelings. Some of them on learning that they are HIV positive may refuse to accept their HIV positive status. Others may be shocked and be in a state of confusion. Others may still respond by being angry or even by crying (KIE, 1997, c). Worse still, others may think of committing suicide. Whichever the reaction, it is important for each of the reactions to be handled cautiously. The distress caused by HIV/AIDS should not be underestimated. Sometimes it causes misdirected emotions. Each person should be allowed to express his/her emotions (Moss, 1992).

HIV pre-test and post-test counselling is thus vital since it enables an HIV positive individual to overcome the distress and thus live positively.

HIV affects individuals Physically by weakening their immune system thus making them prone to frequent opportunistic infections. Frequent attacks by opportunistic infections deny the HIV infected persons an opportunity to work and earn a living. This may lead to such people having a low living standard characterised with inadequate medical care, poor shelter and poor diet among other things. This might hasten the death of such affected persons.

HIV/AIDS has a number of effects on the society as a whole. It not only affects the infected but also affects their family members, friends and relatives. Some of the persons living with HIV are the sole family breadwinners. When such people develop AIDS they are unable to earn a living for their families and for themselves. This often leads to poor living standards of the families so affected. In case the infected are parents of school going children, the children might be forced to drop from school either to care for their ailing parents or due to lack of money for school fees and other school expenses. The ultimate death of both parents, which in most cases is certain, renders the children orphans.

The number of AIDS orphans is increasing at an alarming rate. There are about 11 million AIDS orphans in sub-Saharan Africa with Kenya having 890'000 AIDS orphans (Redfern 2002, July 3). Many of these orphaned children are most often affected economically, socially, psychologically and even spiritually. They do not have people to give them the required care. They are often cared for by their ageing grandparents, family friends and relatives who in most cases cannot afford to

feed, cloth and educate them adequately because of other pressing economic and social commitments.

In some situations the orphaned children might not have anybody to care for them. These orphans drop out of school and opt to seek for some form of employment. Some even opt to go and live in town streets where they would beg **for** a living. Some of the orphans have grown up to become adults living in the streets. This scenario has resulted to the increase in the number of people living in the streets. This increase is a real threat to the state security since many of these **people** get involved in crimes such as theft, prostitution, and other vices such as drug abuse. Their involvement in prostitution is specifically a major setback to the fight against AIDS since it may lead to an increase in HIV infections. It additionally may results to unwanted pregnancies.

AIDS has contributed to the slowing down of the rate of economic growth of adversely affected countries. It has put some strain on sectors that are vital in the economic development of a country. Sectors that are adversely affected include the health sector, the agriculture sector, the industrial sector and the education sector. The health sector is overstrained with AIDS patients who currently cover more than 50% of the hospital beds. This means that more human and financial resources are used to care for and treat AIDS patients. Such resources would have been used to improve the existing health services or be put to some other use.

The agriculture sector, the industrial sector and the education sector have been affected through the loss of skilled workforce most of whom are in their productive age period of their lives (15-45 years) (KIE, 1997c). Loss of skilled people in this age bracket has lead to an increased need for training of a new

workforce to take up the jobs of those who die from HIV related ailments. Unfortunately those undergoing training face the same fate as their predecessors. This means that the government uses a large amount of resources to train skilled human personnel some of whom are claimed by AIDS before they render their services to the optimum. Apart from the loss of skilled human resource, these sectors have also suffered from the loss of working time through frequent sick leaves taken by the AIDS patients. This has a negative effect on the production efficiency in these sectors.

In the overall, HIV/AIDS has had a serious economic and social impact especially in developing countries. This has resulted to a decrease in economic growth and a disintegration of family and communal structures in these countries (Bellavance, 1996). HIV/AIDS is indeed a real threat to all forms of progress in any given society.

## **2.9 Controversial Issues on HIV/AIDS**

The HIV/AIDS epidemic is surrounded with a number of controversies. Some of the controversies arise from mere ignorance and prejudice concerning the issues under controversy while other controversies arise from conflicting historic and scientific information concerning the issues under controversy. Both causes of controversy are significant since they greatly influence how people respond to HIV/AIDS control programmes and their general view on the HIV/AIDS condition. Some of the significant controversial issues include the origin of HIV/AIDS, use of condoms to control the spread of HIV/AIDS and use of quarantine as a method of HIV/AIDS control. These and others are discussed here below.

### 2.9.1 The Origin of HIV/AIDS

The origin of HIV and AIDS is a mystery. The debate about the origin of HIV began in the early 1980s after its discovery (Marshall, Acton-Hubbard & Bull, 1993). In the bid to trace back the first case of HIV/AIDS, scientists have examined records and blood preserved in blood banks in the past (Hubley, 1990; Marshall, Acton-Hubbard & Bull, 1993). About this search Hubley (1990) say:

Searching through case records it has been suggested that the first recorded case of HIV infection that have been found were in a New Orleans teenager who died with strange symptoms in 1969 and in a lady in 1959 from Zaire. However there were probably additional cases of AIDS in other countries of which we have no knowledge (p. 16).

Marshall, Acton-Hubbard and Bull (1993) say that prior the identification of HIV and AIDS, there were a number of recorded cases of AIDS related ailments. They cite eight cases that serve to illustrate that AIDS was in existence prior its scientific identification in the early 1980s. These cases and the year in which they were noted are listed below.

- 1) 1959: a 45 year old US man born in Haiti died of what can now be associated with AIDS.
- 2) 1959: a British soldier with Kaposi's Sarcoma and Pneumocystis died in Manchester.
- 3) 1969: a 15-year old black US boy died with Kaposi's Sarcoma and other opportunistic infections in St. Louis.
- 4) 1975: a previously healthy 7-month old infant had Pneumocystis in New York City.

- 5) 1975: a 47-year old Danish surgeon who worked in Zaire died in Denmark of what can now be associated with AIDS.
- 6) 1977: a 34-year old Zairian woman died in Kinshasa of what can now be associated with AIDS.
- 7) 1977: a 27-year old Rwandan mother developed novel immunodeficiency symptoms.
- 8) 1979: a 44-year old homosexual man died with Kaposi's Sarcoma in New York City.

As the search on the origin of HIV/AIDS continues, a number of theories have been put forward to explain its origin. None of these theories has satisfactorily explained the origin of HIV/AIDS. Some of the theories have supportive evidences, some of which are flimsy (Hubley, 1990). There are three common theories that have been put forward to explain the origin of HIV. These are the germ warfare (laboratory) theory, the green monkey theory (the African origin theory) and the prior existence theory,

**a) The germ warfare (laboratory) theory**

Proponents of this theory suggest that HIV was produced by American military as a germ warfare agent. This theory is based on a paper published by three German scientists in 1986 (Hubley, 1990). "This theory has been criticised because the technology of genetic engineering did not exist in the early 1970s" (Hubley, 1990, p. 16).

**b) The green monkey theory (the African origin theory).**

This theory suggests that HIV was present in animals (specifically the African green monkey) where it did not cause disease. "The evidence that appear to

support this is that the virus HIV-2 is genetically similar to a virus that was found in laboratory monkeys in California" (Hubley, 1990, p.15). This theory remains a vague theory and has angered many Africans (Panos Dossier Institute, 1988). Some Africans view it as a theory devised by non-Africans to imply Africa as the origin of HIV/AIDS.

Critics of this theory argue that the monkeys may have been contaminated with the virus from man in the laboratory setting. They also say that since the original AIDS epidemic was based on HIV-I and not HIV-2, the theory is not valid (Hubley, 1990).

**c) The prior existence theory**

This theory suggests that HIV has always existed in small isolated groups of people (e.g. in remote areas) but either death amongst them was unnoticed or these people had immunity (Hubley, 1990). Marshall, Acton-Hubbard and Bull (1993) note that although the presence of HIV in blood samples has only been traced back to 1950s, it might have existed in some human populations for many years before. They assert,

... there is nothing to suggest that the virus had not been working in people for many years before that. Only in the last two decades have scientists developed the technology to identify this type of retrovirus. The biology of the virus suggests that HIV may have been in the human population for anything between twenty-five and 100 years (p. 67).

Although their view gives a limit of between 25 and 100 years, it almost supports the prior existence theory. Critics of the prior existence theory however argue that it



is impossible for such a disease to have been unnoticed for a long time (Hubley, 1990).

Amidst the confusion about the origin of HIV/AIDS it is only safe to adopt the following suggestions: "The true origin of the family of AIDS viruses may be so far in the past that they will never be uncovered" (Panos Dossier Institute, 1988, p. 35); and "... there is simply no clear evidence to suggest any one place where HIV may have originated. The truth will probably never be known" (Marshall, Acton-Hubbard & Bull, 1993, p. 68). This would be the safest viewpoint at present since the debate about the origin of HIV/AIDS is not profitable. About this debate, Hubley (1990) says, "the debate about the origin of AIDS has not been helpful because it has created bitterness and diverted the attention from the important task of prevention" (p. 16). Hubley (1990) quotes one official in the Ugandan National AIDS Control Programme to have implied such a debate as a waste of time by saying: "If you have a snake in the house you don't waste time asking where it came from. You do something about it" (p. 16).

### 2.9.2 The Condom Issue

Use of condoms as a measure to combat the spread of HIV has been and continues to be relatively controversial issue amongst various groups of people. Many people have opposed and many others have supported the use of condoms with different reasons. Some of the reasons may be valid but others may be based on mere prejudice. Public debates going on in the media are an evidence of the existence of the 'pro-condom' and 'anti-condom' groups.

Those who support the use of condoms to combat the spread of HIV argue that though condoms • not 100% • effective, they can greatly minimise chances of

contracting HIV. Their assertion is based on the scientific evidence that if condoms are used correctly they can greatly reduce chances of HIV infection during sexual intercourse. They also argue that since it is unrealistic for many unmarried people (especially the youth) to abstain from sex, they should be entreated to practice '*safer sex*' (use of condoms) to avoid contracting HIV and sexually transmitted diseases. They also argue that use of condoms would in addition minimise cases of unwanted pregnancy. They therefore claim that sexually active people (including teenagers) should be taught explicitly on the use of condoms and that these condoms should be availed readily to them (Meier 1994; population council, 1999; UNAIDS, 2002, July).

Meier (1994) cites Canada, Netherlands, France and Sweden as countries that have successfully tried to openly promote the use of condoms (and other contraceptives) by the youth to reduce incidences of teenage pregnancies. This may imply that use of condoms could also reduce the rate of HIV infection amongst the teenagers.

Some of those who oppose publicising the use of condoms argue that encouraging the youth to use condoms is like giving them a go ahead to get involved in premarital sex. Some of the religious groups/organisations such as the Catholic Church holds this view (Kozakiewicz, 1974). Some leaders in this church have even opposed the use of condoms as a method of birth control.

Other people who are against the publicising of condom cite lack of 100% assurance of protection by condoms (due to the likelihood of them bursting or slipping off during sexual intercourse) as a reason for discouraging their use (Otieno & Maina, 2001, September 7). Others still argue that use of condoms makes sex less

enjoyable since it makes sex less spontaneous and lessen sexual sensation especially for the men (Rathus & Boughn, 1994). Such people liken using a condom during sexual intercourse to chewing a sweet with its wrapper on (Kweyu, 2001, august 2) or eating a banana with its peel on. Other ignorant people have even been heard (by the researcher) arguing that condoms might be containing MIV that has intentionally been placed there by the 'white man' with the intention of reducing the population of the Africans.

Whichever reason given for supporting or opposing the use of condoms should not be ignored or taken lightly. Those reasons that merit should be analysed critically before one comments about them. Similarly, those that do not merit should be countered cautiously,

About providing condoms to the school going population Hubley (1990) says.

Whether condoms should be made available to schoolchildren is a question that can only be answered within the context of a particular country and group of children. Some people might argue that giving condoms would tempt children to experiment with sex rather than abstain. Another view is that the number of school-aged pregnancies is evidence that children are already experimenting with sex, so they might as well receive advice on how to protect themselves (p. 72).

Though this argument is acceptable, it is rather evasive since it does not suggest outright guidelines on how to determine the context under which condoms may or may not be availed to the youthful population. Lack of definite agreed upon

guidelines on the use of condoms in the control of HIV is an indicator of how highly controversial this issue is.

### **2.9.3 Use Of Quarantine and Isolation to Control HIV**

Various governments in different countries have laws that protect their inhabitants from arbitrary arrest, detention, imprisonment and restricted movement. Most of these countries also have legislation that allows the authorities to isolate and/or quarantine people suffering from highly contagious diseases. Diseases covered by such legislation are usually those diseases that are "spread by casual contact, by coughs or sneezes, by touch or through contact with personal items such as infected clothing or utensils" (Panos Dossier Institute, 1998, p. 119). HIV/AIDS does not however fall in this category of diseases.

Regardless of HIV not being contagious, some countries have in the past attempted to control its spread by use of quarantine. One such country where quarantine has been advocated for and practised openly is Cuba. Cuba justifies its action by claiming that it will greatly "save the cost of preventing an epidemic" (Panos Dossier Institute, 1998, p. 120). South Korea has also considered the possibility of using quarantine in the control HIV/AIDS. The USA indiscriminately practices quarantine. It tests all its servicemen and servicewomen before they are posted to other countries. It also does not allow immigrant/refugees who test HIV positive into the country.

In Iceland, the "Icelandic law allows isolation of carriers of contagious life-threatening diseases, including HIV and AIDS" (Panos Dossier Institute, 1998, p. 118). In South Africa it is legal to test any foreigner or citizen and deport or isolate those infected with HIV (Panos Dossier Institute, 1998).

Though the governments that use quarantine and isolation to control the spread of HIV believe that these measures contribute to the control of HIV/AIDS, some people think otherwise. Such people argue that these two measures contribute to the increase in the rate at which HIV spreads especially within citizens of a given country. These measures contribute to increased stigmatisation of HIV/AIDS, which in turn will impact negatively on HIV/AIDS control programmes. Also, with these measures in place only few people would be willing to go for voluntary HIV testing which is a crucial component in the control of the spread of HIV. Other people oppose the use of these measures from the 'human right' point of view. Such people argue that restricting movement of persons with HIV and AIDS is tantamount to taking away their freedom of movement, which is a basic human right. They see this as being unfair especially when one considers the fact that HIV/AIDS is not a contagious condition.

#### **2.9.4 Other Controversial Issues**

HIV status has had an influence on the insurance practice (Moss, 1992). Many insurance firms have instituted policies that do not allow HIV positive persons to take some insurance policies such as the life insurance policy. This means that people intending to take this policy should have a mandatory HIV test before they are insured. This policy might have arisen from the increasingly hefty sum of money being paid to many insured people who presumably died from AIDS only a few years after they have taken this insurance policy. Some people have raised their voices against this discriminatory insurance practice.

The HIV/AIDS issue has also moved stealthily into employment policies. Though there is no legislation that allows employers to discriminate against

HIV/AIDS persons, some employers require their prospective employees or trainees to undergo a mandatory medical test, which includes an HIV test before they are considered for any form of employment or training. In some cases some employers have sacked some of their workers suffering from AIDS because of the frequent sick leaves they take. Such employers consider the frequent sick leaves as a loss of the valuable working hours. Some human right groups have opposed both the HIV pre-employment test and the sacking of HIV/AIDS employees, which they consider to be discrimination against humanity.

In the past there has been a controversy on when to start using the antiretroviral drugs. Physicians were not sure whether to prescribe the drugs for use to an HIV positive person before or after developing AIDS. A recent study has however indicated that early treatment with some of these drugs (Zidovudine and PCP prophylaxis) "improves survival in addition to slowing down the progression to AIDS" (Graham, Zeger & park, 1992, p. 1037). Another controversy in the use of antiretroviral drugs has been on the question whether pregnant mothers should use the drugs. It has been the feeling of some personalities that these drugs are harmful to pregnant women and the foetus and should not therefore be used by HIV positive women who are pregnant. One notably person with such a view is the current South Africa president, Hon. Thabo Mbeki whose government denied pregnant women access to antiretroviral drugs up to recently when a South African court ruled against the governments stand (Kenya Medical Research Institute, 2001).

The fate of rapists that infect rape victims with HIV is another relatively controversial issue that is emerging. Some people advocate for a capital punishment for such rapists. A local dairy newspaper quoted a then senior Kenyan leader to

have recommended death penalty to rapists who infect their victims with HIV (Mogonyi, 2001, July 1). This suggestion looks discriminatory against HIV positive rapists since rape is the very same grave crime regardless of whether one is HIV positive or not. The law however makes it hard for such a discriminatory suggestion to be effected since it does not stipulate this penalty.

### **2.10 Conceptual Framework**

Teachers are the actual implementers of the AIDS Education curriculum (KIE, 1997a; KIE, 1997b). They are expected to inculcate in the learners good morals, skills and attitudes that will enable them to avoid contracting HIV. Their efficiency and effectiveness in implementing the AIDS Education curriculum may be influenced by various factors. These factors include the following:

- i) In-service training on HIV/AIDS issues.
- ii) Teachers' religion/religious believes.
- iii) Teachers' attitude towards HIV/AIDS.
- iv) Teachers' level of knowledge on HIV/AIDS.
- v) Teachers' level of professional/academic training.
- vi) Teachers' age and years of teaching experience.

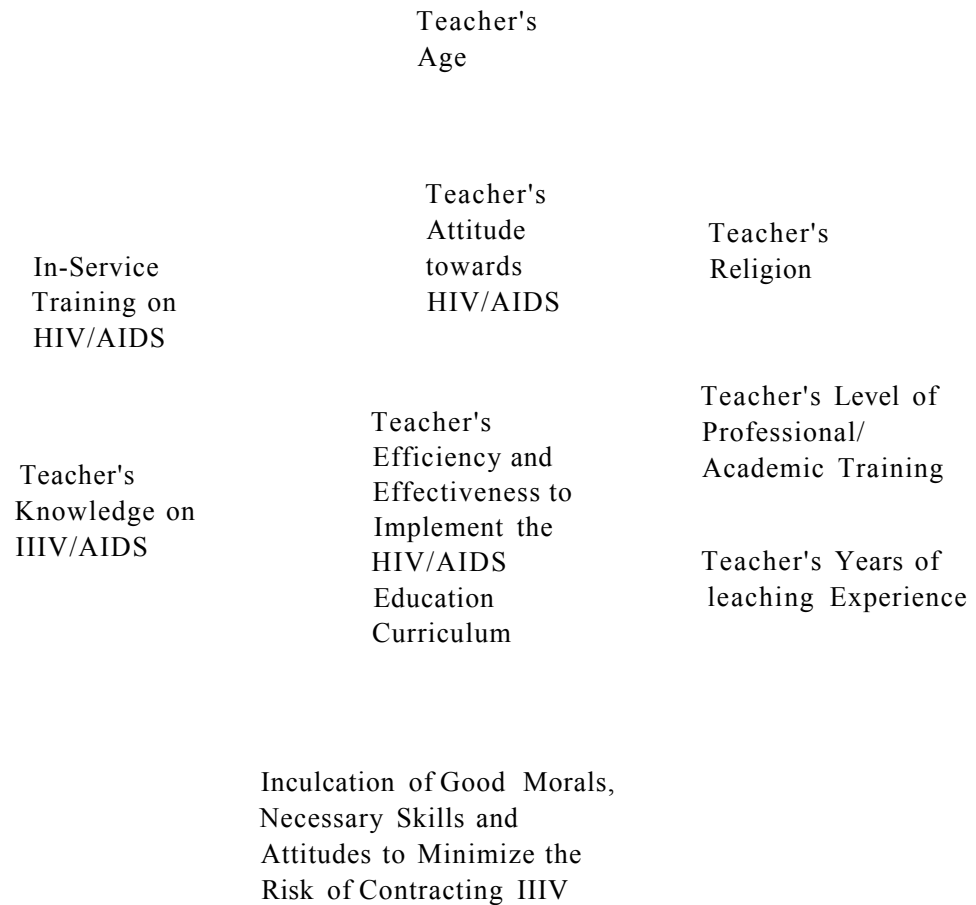
These factors may influence the teachers' efficiency and effectiveness to implement the HIV/AIDS Education curriculum directly or indirectly. For instance, the teachers' knowledge on HIV/AIDS issues may have a direct influence on their efficiency and effectiveness to implement the AIDS Education curriculum. In-service training on HIV/AIDS issues and the teachers' religion/religious believes may on the other hand influence the teachers' efficiency and effectiveness in

implementing the AIDS Education curriculum indirectly by influencing their attitude towards HIV/AIDS Education.

The above listed factors may have a positive or negative influence on the implementation process. Any positive influence is likely to result to an increase in the teachers' efficiency and effectiveness in the HIV/AIDS curriculum implementation process which will in turn help to inculcate good morals, the necessary skills and attitudes that will enable learners minimise the risk of contracting HIV. A negative influence on the other hand can result to inefficiency and ineffectiveness in the implementation process. The influence of each of these factors is the focus of this study. The conceptualised interrelationship between these factors is illustrated in the flow chart in figure 2, which illustrates the conceptual framework of this study.



**Figure 2. Conceptual framework of the study**



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter gives a comprehensive outline of the means that were used to achieve the intended end of this research study. Its contents are discussed under the following sub-headings: Research Design, Target Population, Sample and Sampling procedure. Research Instrument, Validity and Reliability of the research instrument. Data collection procedures and Data Analysis.

#### **3.2 Research Design**

This research study utilised a survey research design. A survey research design "deals more with questions of what is rather than why it is so" (Wiersma, 1986, p. 15). This design was ideal for use in this study, which intended to expose the situation on the preparedness of teachers from various learning centres to implement the new HIV/AIDS Education Curriculum.

#### **3.3 Target Population**

The target population in this study was all the 'main carrier' subject teachers who were teaching in National Secondary School (NSS) in Nairobi Province at the time when the research was being conducted. NSS 'Main Carrier' Subject teachers were selected for study because they come into contact with learners who have different social, economic and cultural background since the learners are selected from different regions of Kenya. These teachers were therefore likely to provide a more general and balanced reflection of the instructional process of the new and yet

to be fully implemented HIV/AIDS curriculum than any other category of secondary school teachers.

'Main Carrier' Subject teachers in NSS in Nairobi Province were singled out (from other NSS) for study because their schools have in the past acted as role models to others schools on several matters. The situation prevailing in these schools is therefore likely to diffuse to many other schools with time since a number of schools tend to emulate them.

There were 5 national schools in Nairobi Province. These schools had a total of 126 HIV/AIDS main carrier subject teachers who were in the official teachers' return records. Seven of the teachers were however officially absent from school during the entire data collection period for various unavoidable reasons.

Ninety-five of the teachers were female while 31 were male. This translated to 75.4% female teachers and 24.6% male teachers. Forty-three of these teachers were teaching Religious Education with 42 teaching Christian Religious Education (CRE) and only 1 teaching Islamic Religious Education (IRE). Forty-one teachers were teaching Biology. Thirty-three, five and four teachers were teaching Geography, SEE and Home science respectively.

### **3.4 Sample and Sampling Procedures**

A sample is a selected segment of the population that is examined to make  
*i*  
 estimates about some unknown population characteristic or make tests to see if an assumption or assumptions about an unknown population characteristic is likely to be accepted (Sanders, 1990). Different formulae for determining a sample size have

been put forward by different authors. These formulae include the one suggested by Sanders (1990) and that suggested by Krejcie and Morgan (Kathuri & Pals, 1993),

This study initially used the formula put forward by Krejcie and Morgan to determine the sample size. The formula is:

$$S = \frac{Z^2 N P Q - P}{d^2 (N - 1) + 3.841 P (1 - P)}$$

Where S = Required sample size.

$Z^2$  = The table value for CHI SQUARE for specified (desired) degree of freedom and level of confidence. This study used one degree of freedom and .95 level of confidence.

P = Population proportion. For this study it was assumed to be .50 since this magnitude yields maximum possible sample.

N = the target population size

$d$  = the degree of accuracy as reflected by the amount of error that can be tolerated in the fluctuation of a sample proportion P about the proportion P. The value of P used here was .05, a quantity equal to  $\pm 1.96$ crp.

(Kathuri & Pals, 1993)

There were 126 Main Carrier Subject teachers in Nairobi Province's NSS. The corresponding sample size therefore was worked out as below:

$$S = \frac{3.841 \times 126 \times 0.50(1-0.50)}{0.05^2 (126 - 1) + 3.841 \times 0.50(1 - 0.50)} = 95.06 \approx 95 \text{ teachers.}$$

Sampling procedure is a means utilised to identify the actual or specific members from whom data is to be collected. Stratified sampling technique was used to select the sample from the population. Proportional stratified Sampling was specifically used here to ensure that all the strata (subgroups in the population) were represented in the sample in proportion to their relative numbers in the population.

There were 5 strata:

- 1) Stratum A- Religious Education (R.E).
- 2) Stratum B- Biology.
- 3) Stratum C- Geography.
- 4) Stratum D- Social Education and Ethics (SEE).
- 5) Stratum E- Home science (H/SC.).

Members of each of these strata shared a commonality of teaching similar content as outlined in each subject's syllabus. The main HIV/AIDS carrier subjects that the teachers were presumably teaching were used to group them into the appropriate strata.

A table of random numbers was used to identify the teachers who would be part of the sample from each stratum. The sample selected from each stratum was proportionate to the percentage composition of teachers in the stratum in relation to the total number of the target population. The number of teachers selected into the sample was 32, 31, 25, 4 and 3 for Religious Education, Biology, Geography, SEE and Home Science respectively. The above selected sample was however not the only one issued with questionnaires. Ultimately, data was collected from the entire available target population as a precautionary measure because of the following reasons:

- i) Some of the strata especially H/sc. and S.E.E had very few members both in the population and in the sample. There were high chances of poor representation (or at worst non-representation) if only one (or none) of those in the sample responded,
- ii) Some members of the originally selected sample were officially out of school during the entire data collection period,
- iii) There was a looming nation-wide teachers' strike that brought about an anticipation of a low response rate.
- iv) The calculated sample size of 95 teachers was not very far from the target population of 126 teachers.

### **3.5 Research Instrument**

This study used the teachers' research questionnaire in Appendix A to obtain data from the teachers. The questionnaire had four main parts. Part A sought to generate demographic information from the respondents. It had items that elicited information on age, gender, marital status, religion, academic qualification/professional qualification and years of teaching experience of the respondents among other information.

Part B sought to establish the degree to which teachers were knowledgeable on HIV/AIDS. It had 20 items that were intended to test the knowledge of teachers on issues such as the modes of transmission of HIV, symptoms of AIDS, prevention of HIV infection and care for HIV/AIDS patients.

Part C had 30 items that were intended to measure the attitude of respondents towards HIV/AIDS Education. The respondents were required to

indicate their 'agreement' with each statement on a five-point Likert-type scale. They were supposed to tick appropriately to indicate whether they strongly disagreed (**SI**) or they disagreed (**D**) or they were undecided (**U**) or they agreed (**A**) or they strongly agreed (**SA**) with the statements provided. The respondents were provided with equal number of positive and negative statements.

The last part solicited information on various aspects that could influence the teaching (actual implementation) of HIV/AIDS Education in secondary schools. These aspects included access to teaching/learning resources and attendance of in-service courses. Others were; the subject(s) the teachers felt was/were most appropriate in the teaching of HIV/AIDS Education, suitability of using infusion and integration in the teaching of HIV/AIDS Education and the problems teachers were facing during the actual implementation of the subject,

### **3.6 Validity and Reliability of the Questionnaire**

Validity is the degree to which an instrument measures what it purports to measure (Cohen & Manion, 1998). Construct validity of the HIV/AIDS knowledge and the attitude towards HIV/AIDS Education questionnaire items was obtained by seeking the opinion of 'judges' who include curriculum specialists from the University of Nairobi and from KIE and teachers from various secondary schools. Content validity of the attitude towards HIV/AIDS Education test was obtained by first translating the constructs that were under study into a set of distinctive behaviours. The attitude test initially had 40 items, which were reduced to 30 by using the item analysis procedure outlined by Henerson, Morris and Fitz~Gibbon (1987). The purpose of doing the item analysis was to select from a pool of items

the ones that most effectively obtain the information wanted and to eliminate the less effective items from the attitude test. In this item analysis, results from the pilot test were used to eliminate 5 positive and 5 negative attitude items, which had average scores that were closest to the neutral point (3 points) in the likert scale, These items were eliminated since they could not differentiate very well the attitudes that were being measured. A procedure outlined by Henerson et al. (1987) was then used to ensure representativeness of the questions included in the instrument.

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Reliability means "consistency". It "concerns with the question of generalizability (Pratt, 1994, p. 144). Reliability of the HIV/AIDS knowledge and attitude towards HIV/AIDS Education questionnaire items was obtained by pre-testing the questionnaire during the pilot study. Twenty teachers from two national schools in Kiambu district were selected as respondents in the pilot study. The Split-Half method was used to test the reliability of both the knowledge test and attitude test.

Spearman-Brown Prophecy Formula (shown below) was used to manually compute the reliability coefficients for the knowledge and attitude tests,

$$r_{\text{split-half}} = \frac{2r_{\text{split-half}}}{1 + r_{\text{split-half}}}$$

$r_{\text{split-half}}$  was computed using the computational formula for the

Pearson's Product-Moment Correlation Coefficient:

$$\hat{Z} = \frac{1}{n} \sum (X_i - \bar{X})(Y_i - \bar{Y})$$

where  $r_{\text{split-half}}$  = Pearson's Product-Moment Correlation Coefficient



$N$  = number of pairs of scores

$\sum XY$  = sum of the product of the paired scores

$\sum X$  = sum of scores on one variable [1<sup>st</sup> split]

$\sum Y$  = sum of scores on the other variable [2<sup>nd</sup> split]

$\sum X^2$  = sum of squared scores on the X variable

[1<sup>st</sup> split]

$\sum Y^2$  - sum of squared scores on the Y variable [2<sup>nd</sup> split]

(Bruning & Kintz, 1968, p. 153)

Using the above formulae, the reliability coefficients for the knowledge and attitude tests in the pilot study were found to be 0.72 and 0.86 respectively. After the pilot study a few necessary corrections were made as appropriate so as to enhance validity and reliability of the questionnaire. The questionnaire was then used to collect data from the target group.

### **3.7 Data Collection Procedures**

Before collecting data, a mandatory research permit was applied for and obtained from the Ministry of Education in the month of June 2002. Questionnaires accompanied with self-addressed envelopes were then issued by hand delivery to 119 HIV/AIDS main carrier subject teachers. This was done in the last week of June 2002. The teachers were expected to respond to all questionnaire items after which they would seal them in the self addressed envelopes and forward them to the school administration from where they were to be collected by the researcher within two weeks. An allowance of three more weeks was give to late respondents.

Collection of the questionnaires was stopped at the expiry of five weeks after its start. A total of 78 teachers out of the 119 issued with the questionnaires returned them.

### **3.8 Data Analysis**

Information collected was coded and analysed using both descriptive and inferential statistics. The data was initially coded manually. The SPSS programme was then used to carry out most of the data analysis procedures. Data on the knowledge on HIV/AIDS and the attitude towards HIV/AIDS Education was initially summarised and presented using frequencies, percentages, mean, standard deviations and variances.

The scores attained by the respondents in the attitude test were interpreted using the classification in table 3. This classification was arrived at by multiplying the mark awarded to the neutral point in the Likert scale (three) with the total number of items to obtain the neutral mark i.e.  $3 \times 30 = 90$ . Any mark below the neutral mark could reflect a negative altitude whereas any mark above the neutral mark could reflect a positive attitude. Marks in both the positive and negative attitude sides were divided to three equal intervals on both sides so as to obtain seven points in a continuum, which could be then used to classify the attitudes. Seven points were considered appropriate since they could give finer intervals between the attitude categories. The three categories on either side of the neutral point of the continuum were then labelled 'slightly', 'moderately' and 'strongly' negative attitude or positive attitude as appropriate.

**Table 3**  
**Key for Classification of Attitudes towards HIV/AIDS Education**

<b>Score</b>	<b>Interpretation/Classification</b>
30-49	Strongly negative attitude
50-69	Moderately negative attitude
70-89	Slightly negative attitude
90	Neutral attitude
91-110	Slightly positive attitude
111-130	Moderately positive attitude
131 -150	Strongly positive attitude

Pearson's Product-Moment Correlation Coefficient was used to test hypothesis I. This hypothesis had rejected the existence of a significant relationship between the teachers' HIV/AIDS level of knowledge and their attitudes towards HIV/AIDS.

Hypothesis 2, which stated that there was no significant difference between HIV/AIDS level of knowledge of teachers who were teaching the different HIV/AIDS carrier subjects was tested using Analysis of Variance (ANOVA). ANOVA is an "approach that allows us to use sample data to test whether the values of the two or more population means are likely to be equal" (Sanders, 1990 p. 382). The sample F ratio for this hypothesis was computed. The computed F value was then compared with the value from the F distribution table at 0.05 level of significance to determine whether it was significant or not. Hypothesis 3 which stated that there was no significant difference between the attitudes towards HIV/AIDS Education of teachers who were teaching the different HIV/AIDS carrier subjects was also tested using Analysis of Variance (ANOVA) at 0.05 level of significance.

T-Test (independent samples) was used to test hypotheses 4 and 5. These two hypotheses stated that there were no significant differences between male and female teachers' HIV/AIDS level of knowledge and male and female teachers' attitude towards HIV/AIDS Education respectively.

Hypotheses 6 and 7 were tested using Pearson's Product-Moment Correlation Coefficient. Hypothesis 6 stated that there was no significant relationship between the number of HIV/AIDS in-service training courses attended and the teachers' HIV/AIDS level of knowledge while Hypothesis 7 stated that

there was no significant relationship between the number of HIV/AIDS in-service training courses attended and the teachers' attitudes towards HIV/AIDS Education.

Finally T-test (independent samples) was used to test hypotheses 8 and 9. Hypotheses 8 stated that there was no significant difference in the HIV/AIDS knowledge level of teachers with different religious affiliations. Hypothesis 9 stated that there was no significant difference in the attitude towards HIV/AIDS Education of teachers with different religious affiliations.

## **CHAPTER FOUR**

### **RESEARCH FINDINGS**

#### **4.1 Introduction**

This chapter gives details of the outcome of the research study. It is divided into twenty main sections and a number of subsections. The first section is this introduction part. The second section gives a summary of the respondents' general demographic information. Most of the data here is given in tabulated form with short explanations acting as a guide for the interpretations of the tables. Percentages, means, standard deviations and variances are given where appropriate.

The third and fourth sections make use of descriptive statistics to present the data on HIV/AIDS knowledge test and attitude towards HIV/AIDS Education test results. Frequencies, percentages, means, standard deviations and variances of HIV/AIDS knowledge test and attitude towards HIV/AIDS Education test scores are given. The sixth to fourteenth sections give an analysis of results obtained from the hypotheses-testing procedures that were used to test the nine Hypotheses.

The next four sections presents Findings on access to Learning/Teaching Materials, the degree of implementation of HIV/AIDS Education, suggested appropriate HIV/AIDS Education carrier subjects and the appropriateness of using infusion and integration method in the teaching of HIV/AIDS in this order. Problems encountered in the implementation of HIV/AIDS Education are listed in the nineteenth section. The last section gives a summary of the research findings.

## **4.2 General Demographic Information of respondents**

### **4.2.1 Teachers' Gender**

In this research study the target population was 126 teachers. One hundred and nineteen teachers were issued with the questionnaires. Thirty of these were male teachers while 89 were female teachers. The female made up 75.4% of the sample while the remaining 24.6% were male.

Seventy-eight teachers returned the questionnaires. Sixty of these were female teachers whereas 18 were male teachers. The percentage return rate for female and male teachers were 67.4% and 60.0% respectively. The average-return rate was 65.6%.

### **4.2.2 Teachers' Age**

Sixty-eight teachers (87.2%) responded to the questionnaire item that sought to know the teacher's age. The rest 12.8% (10 teachers) either left the question unanswered or wrote 'adult'. Reasons for their non-response or for concealing their age were not established. Table 4 shows the numbers and percentages of respondents who were in each of the indicated age groups.

The lowest age was 30 years while the highest age was 57 years. The range was therefore 27 years. The mean age and the standard deviation were 38.0 years and 6.2 respectively.

More than three-quarters of the respondents had between 30 and 44 years. People in this age range are just as vulnerable to HIV/AIDS infection as the youth are since they are sexually active. These relatively youthful teachers can however be useful in educating the youth about HIV/AIDS since the generation gap between them and the school going youths is not very wide.

**Table 4****Age of Respondents**

<b>Age in years</b>	<b>Frequency</b>	<b>Percent</b>
30 - 34	25	36.8
35 - 39	19	27.9
40 - 44	13	19.1
45 - 49	6	8.8
50 - 54	4	5.9
55 - 59	1	1.5
Total	68	100.0



### 4.2.3 Teachers' Marital Status

Various marital statuses were presented to the respondents who were required to tick the appropriate one. Seventy-five teachers (96.2%) indicated their marital status while 3 teachers (3.8%) did not. Sixty-Seven teachers (89.3%) were married, 5 (6.7%) were single and 3 (4.0%) were widowed.

More than three-quarters of the teachers were married. These teachers are expected to be having stable marriage relationships, which could act as a positive reinforcement to the good moral behaviours expected of the learners.

### 4.2.4 Teachers' Religion

With regard to religious affiliation, the following options were available to the respondents: Catholic, Protestant and Muslim. Respondents were required to select from this list or to indicate any other religion or denomination they belonged to.

Seventy-six teachers (97.4%) indicated their religion/denomination while 2 teachers (2.6%) did not. There were 50 (65.8%) Protestants while 26 (34.2%) were Catholics. There was no Muslim respondent.

### 4.2.5 Teachers' Qualifications

All the 78 teachers responded to a questionnaire item requiring them to indicate their highest academic/professional qualification. The qualifications that were indicated by the respondents are shown in table 5.

The highest percentage of the respondents (62.8%) had a B.ED, degree. Most of the rest were also trained teachers with the necessary teacher qualifications. Only 7 teachers (9.0 %) did not have formal teacher education/training. These had not attended any initial teacher education/training course. Two of these indicated that they were untrained teachers (UTs) a response, which was least expected

**Table****20****Respondents<sup>1</sup> Professional/Academic Qualifications**

<b>Qualification</b>	<b>Frequency</b>	<b>Percent</b>
M.Ed.	2	2.6
M.Sc.	2	2.6
M.Div.	1	1.3
M.A	2	2.6
B.Ed.	49	62.8
B.Sc./PGDE	5	6.4
B.A/PGDE	1	1.3
ATS-II	1	1.3
Dip.	11	14.1
SI	2	2.6
UT	2	2.6
<b>Total</b>	<b>78</b>	<b>100.0</b>

since all teachers teaching in secondary schools are expected to have some form of professional training. The high percentage of trained teachers implies that most teachers have the basic skills in teaching, which were presumably obtained from initial Teacher Education.

#### **4.2.6 Teaching Experience**

Seventy teachers responded to a questionnaire item requiring them to indicate the number of years they had taught in secondary school while 8 teachers did not respond. The data was categorised into classes that had an interval of 5. Table 6 shows the number of teachers that were in each class. The lowest number of years of teaching experience was 4 years while the highest was 32 years. The range was 28 years. The arithmetic mean years of teaching experience was 14.2 years while the standard deviation was 7.0 years.

Teaching experience is expected to influence the teachers' effectiveness. Teachers with more years of teaching experience are expected to be more effective in the implementation of the curriculum in their areas of specialisation. This may or may not be true in the case of implementation of HIV/AIDS Education. It is however expected that the teachers' mean of 14 years of teaching experience is enough to have prepared them adequately to tackle emerging issues such as HIV/AIDS.

#### **4.3 HIV/AIDS Knowledge Test Findings**

All the 78 teachers responded to various items in the HIV/AIDS knowledge test. Only a handful left a few items unanswered. It was assumed that these respondents were not well knowledgeable on such items. The unanswered items

**Table 20****Respondents' Teaching Experience**

<b>Teaching experience (Yrs)</b>	<b>Frequency</b>	<b>Percent</b>
1 - 5	1	1.4
6 - 10	24	34.3
11 - 15	21	30.0
16 - 20	11	15.7
21 - 25	6	8.6
26 - 30	5	7.1
31 - 35	2	2.9
Total	70	100.0

were therefore marked wrong. The test was marked and scored manually out of a total of 20 points. The scores were then converted to percentage scores. Table 7 gives details on the general performance of the respondents in this test.

The lowest score attained was 35% (equivalent to 7 points). Only one person had this score. Four respondents attained the maximum 100% score (20 points). The range of the scores in percentage was 65%. The computed arithmetic mean score was 77.8 %.

#### **4.4 HIV/AIDS Education Attitude Test Results**

All the 78 teachers responded to the various items in the attitude towards HIV/AIDS Education test. The respondents could score a minimum of 1 point and maximum 5 points for each test item. Since there were 30 items, the minimum possible score could be 30 (i.e.  $1 \times 30$ ) while the maximum possible score could be 150 (i.e.  $5 \times 30$ ). The lowest and highest scores attained in this test were 87 and 137 points respectively. The range was 50 points. The respondents' attitude scores were in four of the seven attitude categories. One respondent (1.3%) was in the slightly negative category. Thirty-Three (42.5%), 39 (50%) and 5 (6.4%) respondents were in the slightly positive, moderately positive and strongly positive attitude categories respectively. Table 8 gives details on the teachers' performance in this test.

The computed arithmetic mean score was 112.1. This score is above the neutral mark (90). It is in the moderately positive attitude category (refer to chapter 3 section 3.5). This implies that on average the respondents had a moderately positive attitude towards HIV/AIDS Education. The computed standard deviation and variance were 12.03 and 144.64 respectively.

**Table 17****Respondents<sup>1</sup> Performance in HIV/AIDS Knowledge Test**

<b>Knowledge score (%)</b>	<b>Frequency</b>	<b>Percentage</b>
35	1	1.3
50	2	2.6
55	1	1.3
60	6	7.7
65	4	5.1
70	9	11.5
75	14	17.9
80	10	12.8
85	13	16.7
90	11	14.1
95	3	3.8
100	4	5.1
<b>Total</b>	<b>78</b>	<b>100.0</b>

The standard deviation and variance were 12.7 and 160.1 respectively.

**Table****20****Respondents<sup>1</sup> Performance in HIV/AIDS Education Attitude Test**

<b>Attitude score</b>	<b>Frequency</b>	<b>Percent</b>	<b>Attitude Categories</b>
70 - 89	1	1.3	Slightly negative
91 - 110	33	42.3	Slightly positive
111-130	39	50.0	Moderately positive
131 - 150	5	6.4	Strongly positive
Total	78	100.0	

#### 4.5 HIV/AIDS In-Service Training

Seventy teachers indicated the number of in-service courses (including seminars, workshops and symposiums) they had attended. Forty-nine teachers (70%) had attended none. Twenty-one teachers had attended one or more courses. Table 9 gives details on the number of in-service courses attended.

Teachers who had attended the in-service courses were required to list the bodies/organisations that organised the courses. The following bodies were listed.

1. Ministry of Education
2. NASCOP
3. KEMRI
4. UNESCO
5. Map International
6. Plan International
7. World Tcach International
8. World Health Organisation (WHO)
9. Ministry of Health
10. Red Cross
11. Nairobi Province Science Congress Committee
12. Kenyatta University
13. No Apologies Program
14. Nairobi Baptist Church
15. All saints cathedral
16. Zawadi Counselling Centre



**Attendance of HIV/AIDS Education In-Service Courses**

<b>Number of in-service Courses Attended</b>	<b>Frequency</b>	<b>Percent</b>
O(Zero)	49	70.0
1	5	7.1
2	13	18.6
3	2	2.9
6	1	1.4
Total	70	100.0

17. Life Promoters
18. Junior Achievers
19. Nairobi School's Guidance and Counselling Office
20. Consolata school
21. Starehe youth Catholic society
22. Full Gospel Churches

Ministry of Education was named 7 times while the rest were each named only once. The Ministry of Education seems to be leading in the in-servicing efforts but it still needs to organise more frequent in-service courses so that most teachers get in-serviced on the teaching of HIV/AIDS Education.

Twenty out of the 21 teachers who had attended in-service course(s) responded to a question asking them whether the course(s) had prepared them to teach HIV/AIDS Education effectively. Nine respondents (45%) claimed the course(s) had prepared them effectively whereas 11 respondents (55%) claimed the course(s) had not prepared them effectively to teach HIV/AIDS. From this results it is evident that more compressive and high quality HIV/AIDS in-service courses need to be organised since more than half of the respondents felt that the ones they had attended had not prepared them adequately.

#### **4.6 Relationship between HIV/AIDS Level of Knowledge and Attitudes towards HIV/AIDS Education**

The first hypothesis, which stated that "there is no significant relationship between the teachers' HIV/AIDS level of knowledge and their attitude towards HIV/AIDS Education", was tested using the Pearson's Product-Moment Correlation

Coefficient. The analysis rejected this hypothesis at .01 level of significance ( $r = 0.398$ ,  $N = 78$ ,  $p < .01$ ).  $r_{critical}$  was .302 (2-tailed).

Though the correlation coefficient obtained was relatively low, it was significant even at .01 level of significance. This implies that a slight change in the HIV/AIDS level of knowledge is likely to result to a significant change in the teachers' attitudes towards HIV/AIDS Education.

#### **4.7 Carrier Subjects and HIV/AIDS Knowledge Levels**

The second hypothesis, which stated that "there is no significant difference between HIV/AIDS level of knowledge of teachers who are teaching the different carrier subjects", was tested using One-Way ANOVA test procedure. The analysis showed a significant difference between the two variables ( $F(4,73) = 3.278$ ,  $p < .05$ ). The mean, standard deviation, standard error and minimum and maximum scores for all the five subjects are shown in table 10. Biology teachers had the highest mean score followed by Religious Education teachers. Home science teachers had the lowest mean score. Results of Analysis of variance are shown in table 11.

An additional analysis using Least Significant Difference (LSD) post Hoc test was done for the sake of multiple comparisons between the subjects. This test revealed the existence of a significant difference in the mean score differences only between Home Science and the other four subjects. Home Science teachers had significantly lower HIV/AIDS knowledge levels. Appendix G gives results of this test.

Table 10

**One-way ANOVA Descriptive Statistics for carrier Subject teachers' Knowledge Scores**

Carrier subject	N	Mean Score	Std. Deviation	Std. Error	Minimum	Maximum
Geography	19	76.8	9.7	2.2	60.0	95.0
1 Ionic Sciencce	2	50.0	.0	.0	50.0	50.0
Biology	27	81.1	11.6	2.2	60.0	100.0
Religious Education	28	77.5	13.8	2.6	35.0	100.0
s.i .:!:..	2	75.0	7.1	5.0	70.0	80.0
Total or Mean	78	77.8	12.7	1.4		

**Table 11**

**HIV/AIDS Knowledge Test ANOVA Results for Subjects**

	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	1877.3	4	469.3	3.278+	XH6
Within Groups	10452.2	73	143.2		
Total	12329.5	77			

Note. **F critical = 2.52. g < .05**

\* significant at **.05** significance level.

#### **4.8 Carrier Subjects and Attitude towards HIV/AIDS Education**

The third hypothesis, which stated that "there is no significant difference between the attitudes towards HIV/AIDS Education of teachers who are teaching the different carrier subjects", was tested using One-Way ANOVA test procedure. The analysis showed no significant difference between the two variables ( $F(4,73) = 1.448, p > .05$ ).

The mean, standard deviation, standard error and minimum and maximum scores for all the five subjects are shown in table 12. SEE teachers had the most positive attitude followed by Religious Education teachers. Home Science teachers had the least positive attitude. Results of Analysis of variance are shown in table 13.

#### **4.9 Gender and HIV/AIDS Level of Knowledge**

The fourth hypothesis which stated that "there is no significant difference between male and female teachers' HIV/AIDS level of knowledge" was tested using an Independent Samples T-Test. Levene's Test for Equality of Variance and the T-test for Equality of means were specifically used here. The analysis showed no significant difference between the HIV/AIDS knowledge scores of the male and female teachers ( $t(76) = 1.592, p > .05$ ). Table 14 shows the results of the analysis.

The mean scores for the male and female teachers were 81.9% and 76.6% respectively. A difference of 5.3% in this means was not found to be significant. The Standard Deviation was 13.9 and 12.1 for male and female teachers respectively whereas the standard mean errors for the male and female teachers were 3.3 and 1.6 respectively.

**Table 12**

**One-way ANOVA Descriptive Statistics for carrier Subject teachers' Attitude towards HIV/AIDS Education Scores**

<b>Carrier subject</b>	<b>N</b>	<b>Mean Score</b>	<b>Std. Deviation</b>	<b>Std. Error</b>	<b>Minimum</b>	<b>Maximum</b>
Geography	19	107.5	12.8	3.0	87.0	134.0
Home Science	2	104.0	12.7	9.0	95.0	113.0
Biology	27	113.3	11.1	2.1	93.0	135.0
Religious Education	28	114.0	12.0	2.3	95.0	137.0
S.E.E.	2	120.5	13.4	9.5	111.0	130.0
Total or Mean	78	112.1	12.0	1.4		

Table

20

**ANOVA Results for Subject teachers' Attitude towards HIV/AIDS Test**

	<b>Sum of Squares</b>	<b>Df</b>	<b>Mean Square</b>	<b>F</b>	<b>Sig.</b>
Between Groups	818.7	4	204.7	1.448	.227
Within Groups	10318.9	73	141.4		
Total	11137.5	77			

Note.  $F_{critical} = 2.52$ .



**Table 17**

**Levene's Test for Equality of Variances and T-test for Equality of Means for  
HIV/AIDS knowledge test by Gender**

	Levene's Test for Equality of Variances		T-test for Equality of Means				
	F	Sig	T	Df	Sig. (2- tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	1.31	.26	1.592	76	.12	5.36	3.37
Equal variances not Assumed			1.47	25.16	.153	5.36	3.64

Note.  $t_{critical} = 2.00$

N = 78

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#### **4.10 Gender and Attitudes towards HIV/AIDS Education**

The fifth hypothesis, which stated that "there is no significant difference between male and female teachers' attitude towards HIV/AIDS Education" was tested using an Independent Samples T-Test. Levene's Test for Equality of Variance and the T-test for equality of means were specifically used here. The analysis showed no significant difference between the attitude scores of the male and female teachers ( $t(76) = .839, p > .05$ ). The results of the analysis are shown in table 15.

The mean attitude scores for the male and female teachers were 114.2 and 111.5 respectively. A difference of 2.7 in this means was not found to be significant. The Standard Deviation was 12.5 for the male teachers and 11.9 for female teachers whereas the standard error means for the male and female teachers were 2.9 and 1.5 respectively.

#### **4.11 Relationship between the Number of HIV/AIDS In-Service Courses and the HIV/AIDS Knowledge Level**

Hypothesis six, which stated that "there is no significant relationship between the teachers' HIV/AIDS level of knowledge and the number of HIV/AIDS in-service training course attended" was tested using the Pearson's Product-Moment Correlation Coefficient. The analysis failed to justify rejection of this hypothesis at .05 level of significance ( $r = -.02, n = 70, p > .05$ ).  $r_{critical}$  was .250 (2-tailed).

The negative Pearson's Product-Moment Correlation Coefficient obtained was very low. This indicates a very insignificant negative relationship between the two variables.

**Table 17**

**Levene's Test for Equality of Variances and T-test for Equality of Means for attitude test by Gender**

	Levene's Test for Equality of Variances		T-test for Equality of Means				
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.04	.850	.839	76	.40	2.72	3.24
Equal variances not assumed			.819	27.02	.42	2.72	3.32

Note,  $t_{critical} = 2.00$

N = 78

#### **4.12 Relationship between the Number of HIV/AIDS In-Service Courses and the Attitude towards HIV/AIDS Education**

The seventh hypothesis, which stated that "there is no significant relationship between the teachers' attitude towards HIV/AIDS Education and the number of HIV/AIDS in-service training courses attended" was tested using the Pearson's Product-Moment Correlation Coefficient. The analysis failed to justify rejection of this hypothesis at .05 level of significance ( $r = -.241$ ,  $n = 70$ ,  $p > .05$ ).  $r_{critical}$  WAS .250 (2-tailed).

The Pearson's Product-Moment Correlation Coefficient obtained was relatively low. This indicates an insignificantly low relationship between the two variables.

#### **4.13 Religious Affiliation and HIV/AIDS Level of Knowledge**

The eighth hypothesis which stated that "there is no significant difference in the HIV/AIDS knowledge level of teachers with different religious affiliations" was tested using an Independent Samples T-Test. Levene's Test for Equality of Variance and the T-test for equality of means were specifically used here. The analysis showed no significant difference in the HIV/AIDS knowledge levels of Catholics and Protestants teachers ( $t(74) = -.424$ ,  $p > .05$ ). The results of the analysis are shown in table 16.

The mean scores for the Catholic and Protestant teachers were 77.1% and 78.4% respectively. A difference of 1.3% in this means was not found to be significant at .05 level of significance. The Standard Deviation was 11.5 and 13.0 for the Catholic and Protestant teachers respectively whereas the standard error mean for the Catholic and Protestant teachers were 2.3 and 1.8 respectively.

**Table 17**

**Levene's Test for Equality of Variances and T-test for Equality of Means for  
HIV/AIDS Kit' fedge test by Religious Affiliation**

	Levene's Test		T-test for Equality of Means				
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.18	.674	-.424	74	.673	-1.28	3.03
Equal variances not assumed			-.441	56.63	.661	-1.28	2.91

Note,  $t_{critical} = 2.00$

#### **4.14 Religious Affiliation and Attitudes towards HIV/AIDS Education**

The ninth hypothesis, which stated that "there is no significant difference in the attitude towards HIV/AIDS Education of teachers with different religious affiliations" was tested using an Independent Samples T-Test. Levene's Test for Equality of Variance and the T-test for equality of means were specifically used here. The analysis showed no significant difference in the attitudes towards HIV/AIDS Education of Catholics and Protestants teachers ( $t(74) = .09, p > .05$ ). The results of the analysis are shown in table 17.

The mean attitude scores for the Catholic and Protestant teachers were 112.4 and 112.1 respectively. There was a very small difference of 0.3 in this means, which was not found to be significant at .05 level of significance. The Standard Deviation was 13.0 and 11.8 for the Catholic and Protestant teachers respectively whereas the standard error mean for the Catholic and Protestant teachers were 2.5 and 1.7 respectively.

#### **4.15 Access to HIV/AIDS Learning/Teaching Materials**

The first three items in part D of the questionnaire sought to establish whether the teachers had access to teaching materials namely the AIDS Education syllabus, HIV/AIDS Education textbook(s) and HIV/AIDS Education guidebook(s). Those who had access to HIV/AIDS Education textbook(s) and HIV/AIDS Education guidebook(s) were required to name them.

Most of those who named the textbooks and guidebooks did not give all the necessary details like the author(s)' names, year of publication, and the

Table 17

**Levene's Test for Equality of Variances and T-test for Equality of Means for attitude test by Religious Affiliation**

	Levene's Test		T-test for Equality of Means				
	F	Sig.	T	Df	Sig. (2-tailed)	Mean Difference	Std. Error Difference
Equal variances assumed	.43	.516	.09	74	.929	.26	2.95
Equal variances not assumed			.09	46.59	.931	.26	3.05

Note,  $t_{critical} = 2.00$

publishers. Summary findings for each of these items are given in the next three subsections.

#### **4.15.1 Access to the Syllabus**

Seventy-seven teachers responded to the questionnaire item that sought to establish whether they had access to the AIDS Education syllabus. Thirty-six respondents (46.8%) had access while 41 respondents (53.2%) did not have access to the syllabus.

Accessibility to the syllabus is a vital component in the implementation of any curriculum. The inaccessibility of the HIV/AIDS syllabus to more than half of the teachers is a real impediment to the effective implementation of the HIV/AIDS curriculum.

#### **4.15.2 Access to HIV/AIDS Textbooks**

All the 78 teachers responded to the questionnaire item that sought to establish whether they had access to HIV/AIDS Education textbook(s). Thirty-three respondents (42.3%) had access while 45 respondents (57.7%) did not have access to the textbook(s).

The list of the textbooks named by the respondents is given below.

- 1) Bloom Or Doom: Your Choice (by KIE).
- 2) AIDS Education For The Youth (by Joe Barbendreier).
- 3) HIV Education For Schools (by University Of Nairobi).
- 4) Living With AIDS (by Map International).
- 5) Growing Together (by Map International).
- 6) God's Answer to HIV (by World Teach).
- 7) Preventing A Crisis- AIDS And Family Planning Work.



- 8) Girls Endangered Species By HIV/AIDS Pandemic.
- 9) General Information on AIDS.
- 10) No Apologies Work Book.
- U) Facilitators Handbook on Abstinence.
- 12) Healthy Living.
- 13) Immunology and Microbiology.
- 14) You Your Life and Your Dreams.
- 15) Talking About AIDS.

#### **4.15.3 Access to HIV/AIDS Textbooks**

All the 78 teachers responded to the questionnaire item that sought to establish whether they had access to HIV/AIDS Education textbook(s). Thirty-three respondents (42.3%) had access while 45 respondents (57.7%) did not have access to the textbook(s).

The list of the textbooks named by the respondents is given below.

1. Bloom Or Doom: Your Choice (by KIE).
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5. Growing Together (by Map International).
6. God's Answer to HIV (by World Teach).
7. Preventing A Crisis- AIDS And Family Planning Work.
8. Girls Endangered Species By HIV/AIDS Pandemic.
9. General Information on AIDS.
10. No Apologies Work Book.

11. Facilitators Handbook on Abstinence.
12. Healthy Living.
13. Immunology and Microbiology.
14. You Your Life and Your Dreams.
15. Talking About AIDS.

Bloom or Doom: Your Choice (by KIE) was mentioned 24 times while No Apologies workbook was mentioned thrice. The rest of the books were mentioned either once or twice.

Accessibility to textbooks is vital in the implementation of the HIV/AIDS curriculum since textbooks are the main source of the content that is to be taught. The inaccessibility of the HIV/AIDS textbooks to more than half of the teachers is a great setback to the effective implementation of the HIV/AIDS curriculum.

#### **4.15.3 Access To HIV/AIDS Education Guidebooks**

Seventy-six teachers (97.4%) responded to the questionnaire item that sought to establish whether they had access to HIV/AIDS Education guidebook(s). Only 10 respondents (13.2%) had access while 66 respondents (86.8%) did not have access to the guidebook(s). The guidebooks named by the respondents were:

- 1) AIDS Education Facilitators handbook (By KIE).
- 2) No Apologies Teacher's Guidebook.
- 3) Guide To HIV/AIDS Book.

Four of the ten respondents did not name the guidebooks they had access to. AIDS Education Facilitators handbook (By KIE) was mentioned four times while the rest were each mentioned only once.

From the results, more than three-quarters of the respondents did not have access to HIV/AIDS Education guidebooks. This is disastrous since it is these guidebooks that are supposed to guide the teachers on how to use infusion and integration method in the teaching of HIV/AIDS Education. These guidebooks need to be availed to the teachers if this method has to be used effectively.

#### **4.16 Degree of Implementation of HIV/AIDS Education**

The choices availed in order to assess the teachers' perceived degree of implementation of the HIV/AIDS Education were very unsatisfactorily, unsatisfactorily, fairly satisfactorily, satisfactorily and very satisfactorily. Seventy-one teachers responded to this item. Fifty-two (73.2%) of the respondents indicated positive responses (fairly satisfactorily, satisfactorily and very satisfactorily). Table 18 gives details on responses to this item.

#### **4.17 Suggested Appropriate HIV/AIDS Education Carrier Subjects**

Seventy-four teachers (94.9%) responded to an item requiring them to name the subject(s) that they considered most appropriate for the teaching of HIV/AIDS Education. Four did not respond to this questionnaire item. Table 19 gives a list of the subjects that were suggested and the number of times each was suggested. The last three suggestions in this list were generalised as is indicated.

Social Education and Ethics topped the list of the suggested subjects with 58 teachers suggesting it. Biology, which was suggested 54 times, was second. CRE was suggested 43 times whereas Geography was suggested 9 times. Eight respondents suggested 'all' subjects as being most appropriate for the teaching of HIV/AIDS Education.

**Table****20****Teachers' views on Extent of Implementation of HIV/AIDS Education****Syllabus in Secondary Schools**

<b>Extent of teaching of AIDS</b>	<b>Frequency</b>	<b>Percent</b>
Very Unsatisfactory	10	14.1
Unsatisfactory	9	12.7
Fairly Satisfactory	20	28.2
Satisfactory	25	35.2
Very Satisfactory	7	9.8
Total No. of responses	71	100.0

**Table****20****Suggested Appropriate Subjects for the Teaching HIV/AIDS Education**

<b>Subject(S)</b>	<b>Number of Time Suggested</b>
SEE	58
Biology	54
CRE	43
Geography	9
Maths	5
Chemistry	5
History	4
Home Science	3
IRE	3
English	3
Kiswahili	2
HRE	1
Music	1
Fine Art	1
Business Education	1
All Subjects	8
Religious Education	8
Languages	7

The top 4 subjects (Biology, SEE, CRE and Geography) are among those suggested by the KIE as the main carrier subject. This confirms their HIV/AIDS carrier subject status. Home science however took the eighth position, which puts its carrier subject status in doubt.

#### **4.18 Appropriateness of Using Integration and Infusion in the Teaching of HIV/AIDS**

Respondents were asked to briefly give their views on the appropriateness of using integration and infusion method in the teaching of HIV/AIDS Education. Fifty teachers (64.1%) responded while 28 did not respond. One possible reason for non-response was lack of insight on what infusion and integration meant. In fact one of the respondents confessed that she was not able to respond to this questionnaire item because she did not know what integration and infusion meant. The responses to the questionnaire item that sought to establish the appropriateness of integration and infusion were classified into four main categories. These are:

- 1) Responses that suggested that the method was appropriate.
- 2) Responses that suggested that the method was inappropriate.
- 3) Responses that implied indecision.
- 4) Responses, which were irrelevant or unclear.

Table 20 gives details of the outcome of these responses.

A greater number (66%) of the respondents suggested that integration and infusion was appropriate in the teaching of HIV/AIDS Education. Some of the reasons that were frequently given for the appropriateness of the method are listed below.

**Table 20****Teachers' Views on the Appropriateness of Integration and Infusion Method**

<b>Response</b>	<b>Number of Respondents</b>	<b>Percentage of The Respondents</b>
Method Appropriate	33	66
Method Inappropriate	8	16
Responses Indicating Indecision	3	6
Responses Exhibiting Irrelevance	3	6
Unclear Responses	3	6
<b>Total</b>	<b>50</b>	<b>100</b>

- It will save on time, which could otherwise be allocated to HIV/AIDS Education as a separate subject,
- All members of staff are involved thus showing the seriousness of the disease.
- The method will give a multifaceted approach and therefore stress on the importance of the subject from different perspectives.
- It will ensure that the students are taught HIV/AIDS Education every day.
- It will help to eliminate stigmatisation and thus make teaching of the subject enjoyable.

Sixteen percent of the respondents suggested that infusion and integration was inappropriate in the teaching of HIV/AIDS Education. Below are some of the reasons they gave to support their suggestion:

- There are chances of overlapping and continuous repetition, which might bring confusion to the learners,
- Since time is inadequate teachers will tend to give the examinable content a priority as compared to HIV/AIDS Education content.
- It is difficult to infuse and integrate some of the HIV/AIDS Education content since there are only a few 'plug in' points,

Reasons given by both the supporters and non-supporters of infusion and integration method need to be considered critically before one makes a decision on its use. It is however evident that more teachers supported the use of this method in the teaching of HIV/AIDS Education,



#### **4.19 Problems Encountered in the Implementation of HIV/AIDS Education**

The last item in the questionnaire asked the teachers to list the problems they were facing in the implementation of HIV/AIDS Education. Sixty-one teachers (78.2%) responded to this questionnaire item. Four of the respondents indicated that they were not experiencing any problem. Seven teachers indicated N/A (not applicable) to possibly imply that this questionnaire item did not apply in their cases. This response possibly suggests that these teachers do not consider themselves as part of those who are supposed to be teaching HIV/AIDS Education content. This proposition is supported by some of the responses that the teachers gave during the distribution of questionnaires. Some of the teachers were almost declining to take the questionnaires claiming that they were not 'teaching' HIV/AIDS Education and that the questionnaires should be given to those who are 'teaching' it. These teachers however accepted to receive the questionnaires on further persuasion.

Fifty respondents listed the problems they were facing in the process of implementing HIV/AIDS Education. Problems that were mentioned most frequently are listed below.

1. Time constrain/inadequate time for covering both the subject's content and HIV/AIDS Education content since the curriculum is already overloaded.
  2. Lack of adequate learning/teaching resources especially the syllabus, textbooks and other reference materials.
  3. Assessing the progress made in the teaching of the subject is difficult.
- An example given by one of the teachers serves to illustrate this: it is

difficult to evaluate the extent to which the change of attitude has taken place since there aren't any well-developed tests.

4. Lack of sufficient training and proper/adequate guidelines on the teaching of the subject.
5. Stigmatisation of those affected with HIV/AIDS.
6. Some students do not take it seriously. Since it is not examinable, they consider it as a waste of time.
7. Not all teachers are open enough to teach some of the issues that are considered controversial e.g. the use of condoms as a preventive measure.
8. Lack of adequate knowledge on some facts concerning HIV/AIDS (such as the inability of mosquitoes to transmit HIV).
9. Some learners still believe that HIV/AIDS does not exist which makes its teaching difficult.
10. Lack of access to current trends on HIV/AIDS.
11. Misconceptions originating from traditional and religious beliefs,
12. It is difficult to change people's attitudes towards some of the HIV/AIDS preventive measures.
13. Most communities consider sex as a taboo subject.
14. Resource persons are not readily available.
15. Negative media publicity (e.g. prevalence of pornographic materials), which negates what, the teachers teach in schools.
16. AIDS Education syllabus and textbooks are not systematic in their sequence.

Time constraint and lack of adequate learning materials were the most mentioned. More than half of the respondents mentioned these two. Lack of sufficient training was also considerably mentioned. The rest were each mentioned only a few times. The three problems that were frequently mentioned need to be seriously looked into with an aim of finding lasting solutions.

#### **4.20 Summary of the Research Findings**

One hundred and nineteen teachers were supplied with questionnaire. Seventy-eight teachers (65.6%) returned the questionnaires. Sixty (76.9%) of these were female teachers whereas 18 (23.1%) were male teachers. The respondents had a mean age of 38 years. Sixty-seven (89.3%) of the respondents were married while 6.7% and 4.0% were single and widowed respectively. Fifty teachers (65.8%) were Protestants while 26 (34.2%) were Catholics. Three did not specify their religious affiliations. Seventy-two teachers (92.3%) were professionally qualified teachers with some training in teacher education.

All the 78 teachers responded to both the HIV/AIDS knowledge test and the test on attitude towards HIV/AIDS Education. On average, the carrier subject teachers were well knowledgeable on HIV/AIDS matters. Their mean score in the HIV/AIDS knowledge test was 77.8%. Biology teachers had the highest score in the HIV/AIDS knowledge test followed by Religious Education, SEE, Geography and then Home science in this order. A mean score of 112.1 out of the maximum possible of 150 was attained in the attitude towards HIV/AIDS Education test. This was a moderately positive attitude. SEE teachers had the most positive

attitude followed by, Religious Education, Biology and then Geography teachers in this order. Home science teachers had the least positive attitude,

The Pearson's Product-Moment Correlation Coefficient ( $r$ ) obtained when relating scores in the two (the knowledge test and the attitude test) tests was 0.398. Though this was low, the correlation was found to be significant even at 0.01 significance level (2-tailed).

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Gender, in-service training and religious affiliation did not have a significant influence both on the teachers' HIV/AIDS knowledge level and their attitudes towards HIV/AIDS Education. The teaching subject did not also significantly influence the attitude towards HIV/AIDS Education. There was however a significant difference between the HIV/AIDS level of knowledge of teachers teaching the different carrier subjects.

Biology, Social Ethics and CRE were named by more than half of the respondents as the 'most appropriate' subjects for the teaching of HIV/AIDS Education in secondary schools. Less than ten teachers named Geography and Home Science.

Less than half of the respondents had access to each of the teaching/learning resources. Guidebooks were the least accessible with only 13.2% of the teachers having access to them. Forty-nine respondents (70%) had not attended any in-service course(s). Eleven (55%) of those who had attended the in-service course(s) claimed that they had not been prepared effectively by the courses.

Thirty-three respondents (66%) supported the use of infusion and integration method in the teaching of HIV/AIDS Education. Reasons they gave for

their support included; the method was time saving, it would reduce stigmatisation and would ensure that HIV/AIDS Education was taught daily. Those who considered this method inappropriate mainly suggested that it could bring about confusion due to repetition and overlapping and that there were no adequate plug in points. Teachers could also tend to concentrate on examinable subject content at the expense of HIV/AIDS Education content,

Sixty-one teachers (78.2%) listed problems that they were encountering in the process of implementing HIV/AIDS Education. Time constrain, lack of adequate teaching/learning resources, lack of sufficient training, lack of proper/adequate guidelines on the teaching of the subject and stigmatisation were some of the main problems the teachers were encountering,

## CHAPTER FIVE

### SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter gives a summary of the entire research report, conclusions and recommendations.

#### 5.2 Summary

This research study intended to establish the preparedness of national secondary school teachers in Nairobi Province to implement HIV/AIDS Education curriculum. The key variables in this study were HIV/AIDS level of knowledge, attitude towards HIV/AIDS Education, HIV/AIDS carrier subjects, gender, number of HIV/AIDS in-service training courses attended and religious affiliations. HIV/AIDS level of knowledge and attitude towards HIV/AIDS Education were the dependent variables while the rest were independent variables.

A formula put forth by Krejcie and Morgan (Kathuri and Pals, 1993) was used to determine sample size, which was found to be 95 teachers. A table of random numbers was used to determine the actual members of the sample. This sample was however not used because of aforementioned reasons (see section 3.4). Instead, all the available carrier subject teachers (119 in number) were issued with questionnaires through hand delivery. The questionnaires were then collected within 4 weeks after the date of issue.

The main objectives of the study were:

1. To establish the extent to which HIV/AIDS Education Carrier subject teachers' were knowledgeable on HIV/AIDS and their attitude towards the HIV/AIDS Education.
2. To collect teachers' views on which subject(s) they consider as the most suitable for the teaching of HIV/AIDS Education in secondary schools.
3. To determine whether HIV/AIDS in-service training equips the teachers with knowledge and attitudes necessary for the teaching HIV/AIDS.
4. To determine the relationship between the teachers' attitudes towards HIV/AIDS and their gender and religious affiliations.
5. To identify problems that may be a barrier to effective implementation of HIV/AIDS Education.

The research hypotheses were:

1. There is no significant relationship between the teachers' HIV/AIDS level of knowledge and their attitude towards HIV/AIDS Education.
2. There is no significant difference between HIV/AIDS level of knowledge of teachers who are teaching the different HIV/AIDS carrier subjects.
3. There is no significant difference between the attitudes towards HIV/AIDS Education of teachers who are teaching the different HIV/AIDS carrier subjects,
4. There is no significant difference between male and female teachers' HIV/AIDS level of knowledge.

5. There is no significant difference between male and female teachers' attitude towards HIV/AIDS Education.
6. There is no significant relationship between the teachers' HIV/AIDS level of knowledge and the number of HIV/AIDS in-service training courses attended.
7. There is no significant relationship between the teachers' attitude towards HIV/AIDS Education and the number of HIV/AIDS in-service training courses attended.
8. There is no significant difference in the HIV/AIDS knowledge level of teachers with different religious affiliations.
9. There is no significant difference in the attitude towards HIV/AIDS Education of teachers with different religious affiliations.

Descriptive statistics was used to compute the range, mean, standard deviation and variances of the various variables. The respondents' mean age was 38 years while their mean years of teaching experience were 14 years. The mean mark for the HIV/AIDS knowledge test was 77.8% whereas that for the attitude towards HIV/AIDS Education test was 112.1 out of 150 (an equivalence of 86.2%). The respondents suggested SEE, Biology and CRE as the most suitable HIV/AIDS Education carrier subjects.

The SPSS programme was used in the hypotheses testing procedure. Hypotheses 1, 6 and 7 were tested using Pearson's Product-Moment Correlation Coefficient. Hypothesis 1 was rejected whereas hypotheses 6 and 7 were accepted. Rejection of hypothesis 1 led to a conclusion almost similar to that got in a research study by Kimani (1996) in which a significant relationship existed



between the attitude toward AIDS and the AIDS knowledge of Adult Education teachers. Hypotheses 2 and 3 were tested using ANOVA. Hypothesis 2 was rejected whereas hypothesis 3 was accepted. T-Test was used to test hypotheses 4,5,8 and 9, all of which were accepted.

More than half of the teachers did not have access to the HIV/AIDS Education syllabus, textbooks and guidebooks. Seventy-one teachers responded to an item requiring them to indicate the extent to which HIV/AIDS Education was being taught in their schools. Ten teachers (14.1%) claimed that it was being taught very unsatisfactorily. Nine (12.7%) indicated unsatisfactorily. Twenty (28.2%), 25 (35.2%) and seven (9.8%) indicated fairly satisfactorily, satisfactorily and very satisfactorily respectively. More than half of the respondents therefore commented positively regarding the extent of the teaching of HIV/AIDS Education. About two-thirds (66%) of the respondents favoured the use of infusion and integration method in the teaching of HIV/AIDS Education. Biology, SEE, Religious Education and Geography teachers had relatively high HIV/AIDS knowledge levels and fairly positive attitudes towards HIV/AIDS Education to qualify these subjects as HIV/AIDS main carrier subjects,

### **5.3 Conclusions**

The HIV/AIDS knowledge test results showed that on average, the teachers were well knowledgeable on most HIV/AIDS matters. The teachers also had a moderately positive attitude towards HIV/AIDS Education. These results imply that the teachers are reasonably prepared to implement the HIV/AIDS Education curriculum.

A comparison of the performance of the different carrier subject teachers in the HIV/AIDS knowledge test revealed that biology teachers were the most knowledgeable with a mean mark of 81.1%. Religious was second with 77.5%, Geography, SEE and home science had a mean mark of 76.8%, 75.0% and 50% respectively. Teachers of these subjects except Home Science teachers were therefore well knowledgeable on HIV/AIDS matters.

In a similar comparison of the performance of the different carrier subject teachers in the attitude towards HIV/AIDS Education test, SEE teachers had the most positive attitude with a mean score of 120.5. Religious Education took the second position with a mean score of 114.0. Biology, Geography and Home Science were third, fourth and last respectively with mean scores of 113.3, 107.5 and 104.0 respectively. SEE, Religious Education and Biology teachers had a moderately positive attitude while Geography and Home science teachers had a slightly positive attitude towards HIV/AIDS Education. On average the teachers of all the five subjects had a fairly positive attitude towards HIV/AIDS Education. This partially qualifies all the five subjects as HIV/AIDS main carrier subjects.

The Pearson's Product-Moment Correlation Coefficient test revealed the existence of a significant relationship between the teachers' HIV/AIDS level of knowledge and their attitude towards HIV/AIDS Education at .01 significant level. This means that an increase in HIV/AIDS knowledge level of the teachers will lead to a considerable increase in their attitude towards HIV/AIDS Education.

There was a significant difference between HIV/AIDS level of knowledge of teachers who were teaching the different carrier subjects at .05 significant level. This difference may be attributed to the nature of the content these teachers come

in contact with during their normal teaching duties. The difference in the content covered during initial teacher training is another possible reason for this difference. There was however no significant difference between the attitudes towards HIV/AIDS Education of teachers who were teaching the different carrier subjects at .05 significant level.

Gender, in-service training and religious affiliations did not influence both the level of HIV/AIDS knowledge and the attitudes towards HIV/AIDS Education. The number of HIV/AIDS in-service training courses attended, which was expected to influence both the level of HIV/AIDS knowledge and the attitude towards HIV/AIDS Education did not have any significant influence on them. This suggests that the in-service courses attended by the teachers may have not been very effective since there was no significant differences in both the level of HIV/AIDS knowledge and the attitude towards HIV/AIDS Education of those teachers who had attended these courses and those who had not.

Results obtained from the learning/teaching resources questionnaire items revealed that more than half of the teachers did not have access to the learning/teaching resources. Only 46.8%, 42.3% and 13.2% of the respondents had access to the syllabus, textbooks and guidebooks respectively. This might be one of the possible contributions to the apparent sluggishness in the implementation of HIV/AIDS Education curriculum.

In response to an item, which required the respondents to list the most appropriate subject for the teaching of HIV/AIDS Education, SEE was the most mentioned (58 times). It was followed by Biology (54 times), CRE (43 times) and then Geography (9 times). Mathematics and chemistry, which shared the next

position, were each mentioned 5 times. History was mentioned 4 times. Home Science, IRE and English were each mentioned 3 times. Kiswahili was mentioned twice while HRE, Music, Fine Art, and Business Education were each mentioned only once. From these results, one can deduce that the teachers recognise SEE, Biology, CRE and Geography as the most suitable subjects in the teaching of HIV/AIDS Education. This confirms the assertion by KIE that these 4 are HIV/AIDS Education main carrier subject. Most teachers however do not recognise the HIV/AIDS carrier subject status of Home science. This may be due to the absence of this subject in most of the schools. IRE and HRE may loosely qualify as main carrier subjects if one assumes that they are part of Religious Education, a general response which was suggested 8 times.

Sixty six percent of the respondents suggested that integration and infusion was appropriate in the teaching of HIV/AIDS Education. Some of the reasons they gave for the appropriateness of the method are: it could save on time which would have otherwise been allocated to HIV/AIDS Education as an individual subject, it could help to stress the seriousness of the disease, it could ensure that the students are taught HIV/AIDS Education every day, and it could help to eliminate stigmatisation. Sixteen percent of the respondents suggested that infusion and integration was inappropriate in the teaching of HIV/AIDS Education. Some of the reasons they gave were: there are chances of overlapping and continuous repetition, teacher would tend to stress on examinable content thus ignoring HIV/AIDS Education content, and the plug points are inadequate. Eighteen percent of the respondents did not respond to this item. Many of the teachers

therefore favoured the use of integration and infusion method in the teaching of HIV/AIDS Education.

Problems encountered by the teachers in the teaching of HIV/AIDS Education included inadequate time, lack of adequate teaching/learning resources, lack of sufficient training and proper/adequate guidelines on the teaching of the subject and stigmatisation. Time constraint and lack of adequate teaching/learning resources were the most frequently mentioned problems. Effective solutions to these problems can increase the efficiency and effectiveness of the HIV/AIDS curriculum implementation process.

Generally, the research revealed that the HIV/AIDS Education carrier subject teachers are well prepared to implement the HIV/AIDS Education curriculum. Their effectiveness in the implementation can however be increased if the problems they are facing can be tackled appropriately.

## **5.4 Recommendations**

### **5.4.1 Recommendations**

The following are recommendations for action made on the basis of the findings from this research:

1. All HIV/AIDS carrier subject teachers in National Secondary Schools in Nairobi Province should be given meaningful training on the use of integration and infusion method in the teaching of HIV/AIDS Education. These teachers are well knowledgeable on HIV/AIDS. They also have a moderately positive attitude towards HIV/AIDS Education. They however need immediate meaningful in-service training to enable them to

effectively implement the HIV/AIDS Education. The HIV/AIDS in-service courses should be well planned and well co-ordinated so as to benefit the teachers. They should also be long enough to create a significant impact. For this to happen there should be one central body, which should be responsible for the planning and co-ordination of these courses.

The government should provide fund in its yearly financial budget, which will be used to purchase HIV/AIDS learning/teaching materials since many of the teachers do not have access to these materials. The availed funds should be monitored closely to ensure that they perform the intended purpose of availing the learning/teaching materials to the teachers.

Some respondents noted that the AIDS Education syllabus is not well synchronised with the available books. Most of the books also do not arrange their content in a systematic manner. To correct this anomaly, KIE should liaise with publishers to ensure the production of high standard learning materials, which are well synchronised with the syllabus. This will enhance the effectiveness in the implementation of the HIV/AIDS Education curriculum.

The teachers rated social Education and Ethics, which is currently being phased out, as the most appropriate HIV/AIDS Education carrier subject.

The curriculum development centre should reconsider its removal from the syllabus with the aim of retaining it. They should also make it compulsory in form one and two since most of the other HIV/AIDS

Education carrier subjects are optional and may not be offered by some schools.

#### **5.4.2 Suggestions for Further Study**

This research study assessed the preparedness of National Secondary School teachers to implement the HIV/AIDS Education curriculum. When conducting the research an urgent need for further research in the following areas was noticed:

1. A similar research study should be conducted in all other categories of schools throughout the country. Primary schools, Secondary schools and Tertiary colleges should specifically be targeted.
2. A detailed research should be conducted to ascertain the role and effectiveness of HIV/AIDS in-service training courses.
3. A research study should be done to determine the extent to which initial teacher training equips the trainee teachers with the necessary HIV/AIDS knowledge. Results from this research can then be used to put in place the necessary corrective measure in the teacher training institutions.
4. A research study should be done to determine the extent to which initial teacher training equips the trainee teachers with the necessary attitudes towards HIV/AIDS Education. Results from this research can also be used to put in place the necessary corrective measure in the teacher training institutions.

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**APPENDICES****Appendix A: Teachers' Questionnaire****Letter Of Introduction**

Robert Ouko  
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**RE: COMPLETING OF TEACHERS' RESEARCH QUESTIONARE ON  
HIV/AIDS EDUCATION**

This study is intended to collect information concerning various issues on the teaching of HIV/AIDS Education in secondary schools. Findings from this study are expected to assist policy makers, curriculum developers, teacher training institutions, the teaching fraternity and the general public in the instructional process on matters relating to this newly introduced subject.

You are one of the respondents selected by random selection. Your experience with the students in the school situation makes you an invaluable source of information in this study. Please feel free to give your views and ideas by completing this questionnaire to the best of your ability and honesty. Your responses will be treated with great confidence. Please do not indicate your name or any self-identification mark anywhere on the questionnaire.

Yours faithfully

ROBERT OUKO



## TEACHERS' QUESTIONNAIRE

N.B Where applicable put a tick in the square after the response that best fits your view/situation.

### **PART-A**

NAME OF SCHOOL \_\_\_\_\_

SEX OF THE TEACHER: MALE  FEMALE

AGE (IN YEARS)

MARITAL STATUS:

MARRIED  SINGLE  DIVORCED

WIDOWED  SEPARATED FROM SPOUSE  E H

What is your religion/denomination?

CATHOLIC  PROTESTANT  MUSLIM

Any other (please specify)

Indicate your highest Academic/ professional qualification

PHD  M.Ed  B.Ed  DIPLOMA  SI  UT

Any other (Please specify)

Name the major and minor subjects that you are professionally qualified to teach.

MAJOR SUBJECT

MINOR SUBJECT(s)

Which subject(s) are you teaching currently?

i) \_\_\_\_\_")• \_\_\_\_\_(iii).

How many years have you taught in secondary school? \_\_\_\_\_years.

### **PART- B**

Put (T) for true and (F) for false in the spaces provided after each of the following statements to indicate whether they are correct or wrong respectively.

HIV status and AIDS status are one and the same condition. ;

The main mode of HIV transmission in Kenya is sexual transmission,

- c) Almost all HIV positive people appear thin.
- d) Condoms (latex rubber condoms) can greatly reduce the risk of HIV infection during sexual intercourse if they are used correctly.
- e) Mosquito bites can transmit HIV.
- 0 The use of Anti-retroviral drugs does not prolong the life of AIDS patients.
- g) HIV infection rate among teenage girls in Sub-Saharan Africa is greater than that among teenager boys in the same region.
- h) Effective anti-HIV vaccines have been developed.
- i) An HIV/AIDS patient may give a negative test to some of the HIV test if he/she is on antiretroviral drugs. \_
- j) Uncircumcised males have a higher risk of being infected with HIV than circumcised males during 'unprotected' sexual intercourse.
- k) Use of diaphragms and oral pills Contraceptives can reduce one's chances of being infected with HIV from an infected person during sexual intercourse.
- l) All children born of HIV positive mothers are also HIV positive.
- m) A single HIV antibody test is adequate to indicate one's HIV status.\_
- n) Approximately seventy percent (70%) of all the people living with HIV/AIDS live in Sub-Saharan Africa.
- o) Women have higher chances of being infected with HIV during 'unprotected' sexual intercourse than men.
- p) Taking alcohol in large quantities makes safer sex less likely and thus contributes to increase in the HIV infections.
- q) An average of not less than ten teachers die daily in Kenya from HIV/AIDS related ailments.
- r) There is only one type of HIV.
- s) HIV mainly attacks and kills the human body's red blood cells.
- t) Having 'unprotected' sex with an HIV positive person does not always lead to HIV infection.

**PART C**

Tick inside only one of the five boxes for each item to express your feelings about each of the following statements. Tick '**SD**' if you **strongly disagree**, '**D**' if you **disagree**, '**IP**' if you are **undecided**, '**A**' if you **agree** and '**SA**' if you **strongly agree**.

- 1 • It is very difficult for any teacher to spare part of his/her teaching lesson to talk about HIV/AIDS to the learners.

<b>sn</b>	<b>n</b>	II	A	SA
-----------	----------	----	---	----

2. It is impossible to teach most of the HIV/AIDS Education content in my teaching subject(s).

<b>sn</b>	<b>n</b>	II	A	SA
-----------	----------	----	---	----

3. Teachers should discourage learners from asking questions relating to HIV/AIDS that are likely to generate controversy.

<b>sn</b>	<b>n</b>	II	A	SA
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4. HIV/AIDS Education can change morals and the sexual behavior of sexually active students.

**sn**    ii    II    SA

5. Some content on HIV/AIDS Education is too frightening to teach to students in secondary schools.

<b>sn</b>	<b>n</b>	II	A	SA
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6. It is ethical for a teacher to demonstrate in class how a condom should be correctly used.

<b>sn</b>	<b>n</b>	II	A	SA
-----------	----------	----	---	----

7. Students infected with HIV do not pose a great risk of infecting other students with HIV if they are allowed to mix freely with them.

<b>SI)</b>	<b>n</b>	II	A	SA
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8. Teaching secondary students on matters pertaining to sex will encourage them to get involved in pre-marital sex.

<b>SI)</b>	<b>n</b>	II	A	SA
------------	----------	----	---	----

9. I do not fear associating with persons who are HIV positive.

SI)	l)	II	A	SA
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10. Invited specialists such as doctors and professional counselors are better placed to teach HIV/AIDS Education to adolescents than teachers.

<b>sn</b>	<b>n</b>	II	A	SA
-----------	----------	----	---	----

11. School students with HIV/AIDS should be advised to stop schooling.

SI)	<b>n</b>	II	A	SA
-----	----------	----	---	----

HIV/AIDS Education can play a greater role in the control of HIV/AIDS than the role religion is currently playing.

- |     |    |    |   |    |
|-----|----|----|---|----|
| SI) | 1) | 1! | A | SA |
|-----|----|----|---|----|
13. Students who may not abstain from sex should be advised to use condoms.
- |    |    |    |   |    |
|----|----|----|---|----|
| SN | 1) | II | A | SA |
|----|----|----|---|----|
14. Secondary school teachers cannot play an active role in educating the non-schooling youth in the community on matters relating to HIV/AIDS.
- |     |    |    |   |    |
|-----|----|----|---|----|
| SI) | 1) | II | A | SA |
|-----|----|----|---|----|
15. Only abstinence from sex as an HIV/AIDS control measure should be taught to students.
- |           |           |           |   |    |
|-----------|-----------|-----------|---|----|
| <b>sn</b> | <b>i)</b> | <b>ii</b> | A | SA |
|-----------|-----------|-----------|---|----|
16. HIV/AIDS Education is an extra unnecessary burden, which should not be added into the formal school curriculum.
- |     |   |    |   |    |
|-----|---|----|---|----|
| SI) | N | II | A | SA |
|-----|---|----|---|----|
17. Teaching HIV/AIDS Education content is enjoyable.
- |     |    |           |   |    |
|-----|----|-----------|---|----|
| SI) | 1) | <b>If</b> | A | SA |
|-----|----|-----------|---|----|
18. I rarely discuss about HIV/AIDS with the learners when teaching my subject.
- |     |          |    |   |    |
|-----|----------|----|---|----|
| SI) | <b>n</b> | II | A | SA |
|-----|----------|----|---|----|
19. Teachers need to take a greater role than parents do in educating secondary school learners on matters pertaining to HIV/AIDS.
- |     |    |    |   |    |
|-----|----|----|---|----|
| SI) | 1) | II | A | SA |
|-----|----|----|---|----|
20. I would readily welcome an invitation to attend an HIV/AIDS Education in-service course.
- |     |    |    |   |    |
|-----|----|----|---|----|
| SI) | 1) | II | A | SA |
|-----|----|----|---|----|
21. I always read articles in the local dailies (newspapers) that talk about HIV/AIDS.
- |     |    |    |   |    |
|-----|----|----|---|----|
| SI) | 1) | II | A | SA |
|-----|----|----|---|----|
22. I have never incorporated HIV/AIDS Education in extracurricular activities such as drama, music and games.
- |     |   |    |   |    |
|-----|---|----|---|----|
| SI) | N | II | A | SA |
|-----|---|----|---|----|
23. I always share any news I get on HIV/AIDS with my students.
- |     |    |    |   |    |
|-----|----|----|---|----|
| SI) | 1) | II | A | SA |
|-----|----|----|---|----|
24. I rarely talk about HIV/AIDS with my colleagues.
- |     |          |    |   |    |
|-----|----------|----|---|----|
| SI) | <b>n</b> | II | A | SA |
|-----|----------|----|---|----|

25. The school administration should give top priority to HIV/AIDS Education when purchasing learning resources such as books, videotapes, etc.

SI)	<b>n</b>	IF	A	SA
-----	----------	----	---	----

26. I have never made an announcement concerning HIV/AIDS in any school meeting such as staff meetings, assemblies, games meetings, etc.

<b>sn</b>	<b>n</b>	<b>II</b>	A	SA
-----------	----------	-----------	---	----

27. I could prefer organizing an HIV/AIDS Education meeting to organizing other school meetings such as games and drama meetings.

<b>sn</b>	<b>n</b>	II	A	SA
-----------	----------	----	---	----

28. It is not possible to adequately integrate HIV/AIDS Education into any of my teaching subject(s).

<b>sn</b>	<b>n</b>	<b>ii</b>	A	SA
-----------	----------	-----------	---	----

29. HIV/AIDS Education teacher/learner meetings need to be organized more frequently in schools.

<b>sn</b>	<b>n</b>	<b>ii</b>	A	SA
-----------	----------	-----------	---	----

30. HIV/AIDS Education can greatly reduce the rate of HIV infection significantly amongst secondary school students.

<b>sn</b>	<b>n</b>	II	A	SA
-----------	----------	----	---	----

#### **PART D**

Please answer the following questions appropriately.

1. Do you have access to the AIDS Education syllabus? YES d] NO G)
2. a) Do you have access to Secondary school HIV/AIDS Education textbook(s)  
YES Q NO O
- b) If yes, name them
3. a) Do you have access to AIDS Education teacher guidebook(s)?  
YES G NO
- b) If yes, name them.



**Appendix B: The Main Components of the Secondary School AIDS Education Syllabus.**

The entire AIDS Education syllabus specifies the topics to be covered at each level of education. Some of the topics recur but with some additional content. The table below outlines the Specific Objectives, the Content to be covered, Learning/teaching activities and the Suggested time for each topic at the secondary school level of education.

**Table****The Main Components of Secondary School AIDS Education Syllabus**

<b>FORM</b>	<b>TOPIC OBJECTIVES</b>	<b>CONTENT</b>	<b>TEACHING/ LEARNING ACTIVITIES</b>	<b>TIME*</b>
<b>ONE</b>	<b>I. BASIC FACTS ABOUT HIV/AIDS AND STDs.</b>  (a) To define the term HIV and AIDS.  (b) To define the term STDs and give examples.  (c) To identify modes of transmission of HIV/AIDS.  (d) To explain ways of avoiding contracting STDs and AIDS.  (e) To explain skills necessary for prevention and control of HIV/AIDS.	(a) Definition and explanation of HIV, AIDS AND STDs.  (b) Modes of transmission of HIV/AIDS.  (C) Ways of preventing and controlling STDs and AIDS: -Chastity/legitimate. -Responsible sexual behaviour. -Blood screening. -Going for HIV tests. -Communication of correct information. -Sterilization of skin cutting and piercing instruments. -Avoiding sharing personal items. -Dress/treat open wounds and cuts.  (d) Skills in prevention and control of STDs and HIV/AIDS: -Communication. -Critical thinking. -Self-assertiveness. -Creative thinking	-Case study. -Discussion. -Singing. -Making scrap books on information about AIDS. -Reciting and writing poems.	3 lessons of 40 minutes.

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2- YOUTH AM) SEXUALITY	(a) Definition of adolescence, youth and sexuality.	-Brainstorming. -Debate. -Discussion.	4 lessons of 40 minutes.
(a) To define the terms adolescence, youth and sexuality.	(b) Physical and emotional changes in girls and boys during adolescence.	-Watching and listening to videotapes.	
(b) To describe the physical and emotional changes in girls and boys during adolescence.	(c) Appropriate ways of coping with physical changes in boys and girls.	-Listening to audiotapes.	
(c) To explain appropriate ways of coping with physical changes.			
3. RESPONSIBLE BEHAVIOUR	(a) Meaning of responsible behaviour.	-Listening to audiotapes.	4 lessons
(a) To explain the meaning of responsible behaviour.	(b) Proper and acceptable ways of relating to members of the opposite sex among the youth: chastity, honesty, self-discipline, respect for others, and self-assertiveness.	-Case study. -Story telling.	of 40 minutes.
(b) To explain the responsible ways in which the youth should relate to members of the opposite sex.		-Group discussion. -Role-play.	
(c) To state irresponsible sexual behaviour relationships.	(c) Irresponsible sexual behaviour: involvement with Sugar Daddy/Mummy, extra marital sex, lesbianism and Homosexuality, premarital sex, incest, prostitution and rape.	-Watching videos.	
(d) To identify ways of avoiding irresponsible sexual behaviour.	(d) Ways of avoiding irresponsible behaviour: resist negative peer pressure, avoid risky situations/ places, avoid drug misuse and abuse.		

<b>4. TIME MANAGEMENT</b>	<b>(a) Time management.</b>	<b>-Group</b> 2 lessons
<b>(a) To explain the meaning and importance of time management.</b>	<b>(b) Work and leisure.</b>	<b>discussion.</b> of 40
<b>(b) To define work and leisure.</b>	<b>(c) Types of appropriate leisure time activities.</b>	<b>-Brainstorming.</b> minutes.
<b>(c) To identify appropriate and inappropriate leisure activities.</b>	<b>(d) Use and misuse of leisure time.</b>	<b>-Debate.</b>
		<b>-Story telling.</b>
		<b>-Singing,</b>
		<b>writing art and</b>
		<b>reciting poetry.</b>
		<b>-Case studies.</b>
		<b>-Listening to</b>
		<b>audiotapes.</b>
		<b>-Watching</b>
		<b>tapes.</b>
<b>5. SIGNS AND SYMPTOMS OF STDs AND AIDS</b>	<b>Signs and symptoms of Chlamydia, Gonorrhoea, Herpes Simplex, Syphilis, Trichomoniasis, Chancroid, Hepatitis B and AIDS.</b>	<b>-Use</b> of 3 lessons
<b>To identify signs and symptoms of common STDs and AIDS.</b>		<b>pictures, slides, of 40</b>
		<b>videotapes and minutes,</b>
		<b>films.</b>
		<b>-Discussion.</b>
		<b>-Singing.</b>
		<b>-Role play</b>
		<b>-Reciting</b>
		<b>poems.</b>
		<b>-Making scrap</b>
		<b>books on</b>
		<b>information</b>
		<b>about AIDS.</b>
		<b>-Watching</b>
		<b>videotapes.</b>
		<b>-Listening to</b>
		<b>audiotapes.</b>

<b>TWO</b>	<b>I. FACTS ABOUT STDS</b>	<b>(a) Modes of transmission and spread of STDs.</b>	<b>-Case study.</b>	<b>3 lessons</b>
	<b>(a) To describe the modes of transmission and spread of STDs.</b>	<b>(b) Method of prevention of STDs.</b>	<b>-Discussion.</b>	<b>of 40 minutes.</b>
	<b>(b) To describe method of prevention of STDs.</b>		<b>-Singing.</b>	
			<b>-Making scrap books on information about AIDS.</b>	
			<b>-Watching videotapes.</b>	
			<b>-Listening to audiotapes.</b>	
	<b>2. RELATIONSHIP BETWEEN HIV/AIDS and STI»s</b>	<b>Relationship between HIV/AIDS and STDs.</b>	<b>-Discussion.</b>	<b>2 lessons</b>
	<b>To explain relationship between HIV/AIDS and STDs.</b>		<b>-Singing.</b>	<b>of 40 minutes.</b>
			<b>-Brainstorming Debate.</b>	
			<b>-Case study.</b>	
			<b>- Watching videos.</b>	
			<b>-Listening to audiotapes.</b>	
	<b>3. YOUTH AND SEXUALITY</b>	<b>(a) Psychosocial changes.</b>	<b>-Case study.</b>	<b>3 lessons</b>
	<b>(a) To explain  the meaning) of psychosocial changes.</b>	<b>(b) Psychosocial changes during adolescence in relation to HIV/AIDS and STDs in girls and boys</b>	<b>Brainstorming.</b>	<b>of 40 minutes.</b>
	<b>(b) To explain the relationship between psychosocial changes in adolescence and HIV/AIDS and S I D s</b>	<b>(c) Ways of coping with psychosocial changes.</b>	<b>-Debate.</b>	
	<b>(c) To explain ways of coping with psychosocial changes.</b>	<b>(d) Areas of conflict with adult/authority.</b>	<b>-Discussion.</b>	
	<b>(d) To identify and discuss the areas of conllct with adult/authority.</b>		<b>-Watching videos.</b>	
			<b>-Listening to audiotapes.</b>	

<p>4. <b>RESPONSIBLE BEHAVIOUR</b></p> <p>(a) To differentiate between responsible and irresponsible behaviour in relation to HIV/AIDS and STDs.</p> <p>(b) To explain the role of peers in socialization process as it relates to the transmission, spread and prevention of HIV/AIDS.</p>	<p>(a) Responsible and irresponsible behaviour.</p> <p>(b) Role of peers in socialization process.</p>	<p>Debate.</p> <p>-Case study.</p> <p>-Discussion.</p> <p>-Role play</p> <p>-Dramatization.</p> <p>-Watching videos.</p> <p>-Listening to audiotapes.</p>	<p>4 lessons of 40 minutes.</p>
<p>5. <b>TIME MANAGEMENT</b></p> <p>(a) To identify various leisure activities that may promote the spread of HIV/AIDS.</p> <p>(b) To develop positive attitude towards work and leisure.</p> <p>(c) To plan for work and leisure.</p> <p>(d) To discuss various religious and cultural approaches to the management of leisure time.</p>	<p>(a) Leisure time activities that may promote the spread of HIV/AIDS.</p> <p>(b) Dignity of work.</p> <p>(c) Importance of leisure.</p> <p>(d) Planning for work and leisure.</p> <p>(e) Religious and cultural approaches to the management of leisure time.</p>	<p>-Watching video.</p> <p>-Discussion.</p> <p>-Brainstorming.</p> <p>- Debate.</p> <p>-Story telling.</p> <p>-Reciting poetry.</p> <p>-Singing.</p>	<p>4 lessons of 40 minutes.</p>
<p>6. <b>FACTORS WHICH MAKE PEOPLE VULNERABLE TO HIV/AIDS INFECTION AND SPREAD</b></p> <p>To explain factors which make people vulnerable to HIV/AIDS infection and spread.</p>	<p>Predisposing factors:</p> <p>-Poverty.</p> <p>-Ignorance.</p> <p>-Broken homes.</p> <p>-Drug Abuse.</p> <p>-Denial of existence of HIV/AIDS.</p> <p>-War of for] conflicts</p> <p>-Cultural practices.</p>	<p>-Case study.</p> <p>-Role-play.</p> <p>-Watching videos.</p> <p>-Debate.</p> <p>-Discussion.</p>	<p>4 lessons of 40 minutes.</p>

<p><b>THREE</b></p>	<p><b>1. HIV/AIDS INFECTION AND CONTROL MEASURES</b></p> <p>(a) To describe the modes of transmission and spread of HIV/AIDS.</p> <p>(b) To state signs and symptoms of HIV/AIDS infection.</p> <p>(c) To state and describe stages of HIV/AIDS infection.</p> <p>(d) To explain HIV/AIDS control measures.</p>	<p>(a) Modes of transmission and spread of HIV/AIDS.</p> <p>(b) Signs and symptoms of HIV/AIDS infection.</p> <p>(c) Stages of HIV/AIDS infection: window period, incubation period and full-blown AIDS.</p> <p>(d) HIV/AIDS control measures: screening, public education and anti-AIDS campaigns.</p>	<p>Watching videos.</p> <p>-Singing.</p> <p>-Dramatization.</p> <p>-Reciting poems.</p>	<p>4 lessons of 40 minutes.</p>
<p></p>	<p><b>2. INTERNAL BODY DEFENCE</b></p> <p>To describe internal body defence mechanism in relation to HIV/AIDS.</p>	<p>Body defence mechanism</p>	<p>-Discussion</p> <p>Watching videos.</p> <p>-Role-play.</p>	<p>2 lessons of 40 minutes.</p>
<p></p>	<p><b>3. RELIGIOUS AND CULTURAL RITES</b></p> <p>To identify religious and cultural practices that hinder the control in relation to the control of HIV/AIDS.</p>	<p>(a) Religious and cultural practices which promote control of HIV/AIDS: chastity, obedience, devotion to God, faithfulness and honesty.</p> <p>(b) Religious and cultural practices that hinder control of HIV/AIDS: husband/wife inheritance, tattooing and scarification, dental extractions, circumcision and other initiation rites, multiple sexual partners, practices surrounding birth, exorcism, witchcraft and sexual cleansing.</p>	<p>-Discussion.</p> <p>-Singing.</p> <p>-Composing songs.</p> <p>-Dramatization.</p> <p>-Reciting poems.</p> <p>-Participation in AIDS prevention cultural activities.</p> <p>Brainstorming.</p> <p>-Debate.</p> <p>-Story telling.</p> <p>-Simulation games.</p> <p>-Case studies.</p>	<p>4 lessons of 40 minutes,</p>

4. COMMUNICATION SKILLS	(a) Communication process. (b) Methods or communication.	-Role-play. -Demonstration -Watching videos.	x 3 lessons of 40 minutes.
(a) To describe the process or communication.			
(b) To describe the methods of communication.			
5. EFFECTS OF HIV/AIDS ON THE INDIVIDUAL FAMILY	(a) Effects of HIV/AIDS infection on the individual: psychological, social, economic and health. (b) Effects of HIV/AIDS on the family: psychological, social, economic and health.	-Discussion. -Watching videos. -Dramatization. -Simulation games. -Case studies.	4 lessons of 40 minutes.
(a) To explain the effects of HIV infection and AIDS on the individual.			
(b) To explain the effects of HIV/AIDS on the family.			
FOUR	I. INTERNAL BODY DEFENCE	(a) Immunology: non-specific and specific defence mechanisms. (b) Immune response: antigens and antibodies. (c) Effects of HIV on the body immune system.	-Role-play. -Discussion. -Watching videos.
	(a) To explain the terms immune response and immunology.		4 lessons of 40 minutes.
	(b) To explain the effect of HIV on the body immune system.		

<p><b>2. KELK;IOUS AND CULTURAL PRACTICES</b></p> <p>To explain (he role of religious and cultural practices in relation to prevention of spread of HIV infection and the spread of AIDS and STDs.</p>	<p>(a) Religious and cultural practices related to the prevention of spread of HIV infections and the spread of AIDS and STDs.</p>	<p>-Discussion. -Singing. -Dramatization. -Reciting poems. -Participation in AIDS prevention cultural activities.</p>	<p>2 lessons of 40 minutes.</p>
<p><b>3. FACTS, MYTHS AND MISCONCEPTIONS ABOUT HIV/AIDS</b></p> <p>To differentiate between facts, myths and misconceptions related to HIV/AIDS.</p>	<p>(a) Facts, myths and misconceptions about HIV/AIDS: transmission, cure and its existence/what it is.</p>	<p>Brainstorming. -Debate. -Story telling. -Simulation games. -Case studies.</p>	<p>-Discussion. 2 -Debate. lessons -Case studies. of 40 -Brainstorming. minutes.</p>

<p><b>4. EFFECTS OF HIV/AIDS INDIVIDUAL, COMMUNITY AND NATION</b></p> <p>(a) To analyse the AIDS situation in his/her immediate community.</p> <p>(b) To analyse the AIDS situation in Kenya and the world.</p> <p>(c) To explain the effect of AIDS on the population structure.</p> <p>(d) To explain the effect of AIDS pandemic on the economy of the country.</p>	<p><b>OF</b></p> <p><b>ON</b></p> <p><b>AND</b></p> <p><b>the immediate community.</b></p> <p><b>Kenya and the world.</b></p> <p><b>the population structure in Kenya: infant and child mortality, life expectancy and population growth rate.</b></p> <p><b>Economic effect of HIV/AIDS pandemic on: human resource, agriculture, commerce, health services, foreign investment and tourism.</b></p>	<p>(a) HIV/AIDS situation in the immediate community.</p> <p>(b) HIV/AIDS situation in Kenya and the world.</p> <p>(c) Effect or HIV/AIDS on the population structure in Kenya: infant and child mortality, life expectancy and population growth rate.</p> <p>(d) Economic effect of HIV/AIDS pandemic on: human resource, agriculture, commerce, health services, foreign investment and tourism.</p>	<p><b>-Discussion.</b></p> <p><b>-Watching videos.</b></p> <p><b>-Dramatization.</b></p> <p><b>-Simulation games.</b></p> <p><b>-Drawing.</b></p> <p><b>-Project work.</b></p> <p><b>-Analysis of data.</b></p> <p><b>-Participation in school club activities.</b></p> <p><b>-Case studies.</b></p>	<p><b>5 lessons</b></p> <p><b>of 40</b></p> <p><b>minutes.</b></p>
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\*: Suggested time.

**SOURCE OF INFORMATION: K.I.E (1999)**



**Appendix C: AIDS Education Topics and Subtopics as Covered By 'Bloom  
Or Doom: Your Choice'**

<b>CHAPTER NUMBER</b>	<b>TOPIC</b>	<b>SUB-TOPICS.</b>
<b>I</b>	<b>YOUTH AND SEXUALITY</b>	<ul style="list-style-type: none"> <li>. Introduction.</li> <li>. Adolescence in girls.</li> <li>. Adolescence in boys.</li> <li>. Other changes that may occur during adolescence.</li> <li>. Psycho-social Changes.</li> <li>. Coping with changes that occur in adolescence.</li> </ul>
	<b>RESPONSIBLE BEHAVIOR</b>	<ul style="list-style-type: none"> <li>. Wrong sexual relationships.</li> <li>. Commercial sex.</li> <li>. Consequences of commercial sex.</li> <li>. Homo Sexuality and Lesbianism.</li> <li>. Consequences of wrong sexual behaviours.</li> <li>. Boy-Girl relationship.</li> <li>. Courtship and marriage.</li> <li>. Summary.</li> </ul>
	<b>MANAGEMENT OF LEISURE TIME</b>	<ul style="list-style-type: none"> <li>. Introduction.</li> <li>. Leisure.</li> <li>. Active and passive leisure.</li> <li>. Choosing leisure activities.</li> <li>. Misuse of leisure.</li> <li>. Religion.</li> <li>. Culture.</li> <li>. Drugs.</li> <li>. Some commonly abused drugs.</li> </ul>

- FACTS ABOUT STDs AND HIV/AIDS.
- . Introduction.
  - . Sexually transmitted diseases [STDs].
  - . Causes of STDs.
  - . How STDs are transmitted.
  - . Signs and Symptoms of STDs.
  - . Transmission of HIV.
  - . Modes of Transmission of HIV/AIDS.
- PREVENTION AND CONTROL OF STDs AND HIV/AIDS
- . Introduction.
  - . Signs and Symptoms.
  - . Prevention of sexually transmitted diseases.
  - . Ways in which HIV can be prevented.
  - . Other methods of prevention.
  - . Management of HIV infected persons.
  - . Medical care for PLWAIDS.
  - . Counseling.
  - . Moral support.
  - . Spiritual support.
  - . Material support.
- INTERNAL BODY DEFENCE
- . The immune body system.
  - . Types of immunity.
  - . How HIV weaken/destroys body's immunity system.
  - . Stages of AIDS development after infection.
  - . How an Antigen-Antibody Response works.
  - . Summary.

- 7 RELIGIOUS AND CULTURAL BELIEFS.
- . Introduction.
  - . Religion.
  - . Culture.
  - . Culture and AIDS Education.
  - . Cultural Rites.
  - . Birth.
  - . Circumcision.
  - . Girl circumcision.
  - . Marriage.
  - . Tattooing and other body cuts.
  - . Summary.
- 8 COMMUNICATION SKILLS
- . Introduction.
  - . Two-way communication.
  - . Methods of communication.
  - . Communication through words.
  - . Skills in communication.
  - . Counseling.
- 9 EFFECTS OF HIV INFECTION AND AIDS
- . Introduction.
  - . Effects of HIV on individuals/society.
  - . Psychological effects of HIV infection.
  - . Effects of HIV/AIDS on family, community and the nation.
  - . Economic consequences of AIDS.
  - . Social implications of HIV/AIDS.
  - . Effects on population.
  - . Referral services.

**SOURCE OF INFORMATION:** KIE (1997c).

## Appendix D): Opportunistic Diseases Associated with Aids.

OPPORTUNISTIC INFECTION/DISEASE	CAUSAL ORGANISM AND MODE OF TRANSMISSION	TYPICAL SIGNS/SYMPTOMS
Tuberculosis	A bacterium called <i>Mycobacterium tuberculosis</i> , transmitted through inhalation of infected droplets aerosolized by coughing, sneezing or talking.	Fever, weight loss, night sweats, and fatigue. Dyspnea, chills, hemoptysis and chest pains usually follow these signs.
<i>Mycobacterium</i> complex	<i>avium</i> A bacterium called <i>Mycobacterium avium</i> , transmitted through oral ingestion or inhalation of infected materials.	Multiple, nonspecific symptoms consistent with systemic illness: fever, weight loss, night sweats, fatigue, anorexia, abdominal pain, and chronic diarrhea.
Salmonellosis	A bacterium of the genus <i>Salmonella</i> transmitted through ingestion of contaminated food or water and other agents such as contaminated snake powder and medication. Contaminated diagnostic agents and infected blood products may also be a source of infection.	Nonspecific signs and symptoms that include fever, chills, weight loss, sweats, anorexia* and diarrhea.

Histoplasmosis	A fungus called <i>Histoplasma capsulatum</i> , which is transmitted through inhalation since it is readily air borne.	Fever, weight loss, hepatomegaly, splenomegaly and pancytopenia. Cerebritis, chorioretinitis, meningitis, diarrhea, and oral, cutaneous and gastrointestinal mucosal lesions may be present in few cases.
Candidiasis	A fungus called <i>Candida albicans</i> which normally grows on human teeth, gingivae and skin and in the oropharynx vagina and large intestine without causing disease except in HIV infected individuals.	Thrush (creamy curdlike, yellowish patches surrounded by erythematous base, on buccal membrane and tongue), inflammation and tenderness of nails and/or tissues surrounding the nails, and vaginitis.

**Cryptococcosis**

A fungus called *Cryptococcus neoformans* found in nature from where it can be aerosolized and inhaled.

Vary depending on the part of the body infected:

- . Pulmonary Cryptococcosis - fever, cough, dyspnea and pleuritic chest pain.

- . Central Nervous System (CNS) Cryptococcosis - fever, malaise, headaches, stiff neck, nausea and vomiting and altered mentation.

- . Disseminated Cryptococcosis - lymphadenopathy and multi-focal cutaneous lesions.

Other (general) symptoms: macules, papules, skin lesions, oral lesions, placental infection, myocarditis prostatic infection, optic neuropathy, rectal abscess, and peripheral and mediastinal lymph node infection.

**Coccidioidomycosis**

A fungus called *Coccidioides immitis*, which normally grows in soils some arid regions of the world.

Influenza-like illness (fever, cough, malaise. Arthralgia, backache, headaches), meningitis, periarticular swellings in knees and ankles, bony lesions, skin findings, and genitourinary (GU) involvement.

*Pneumocystis carinii*  
pneumonia (PCP)

*Pneumocystis carinii* A protozoan called *Pneumocystis carinii*, which exists in human lungs (but is only life threatening in individuals with AIDS) and is transmitted by airborne exposures.

Persistent fever, fatigue and weight loss followed by respiratory symptoms (dyspnea usually noted initially in exertion and later at rest, and cough which is initially dry and non-productive but becomes productive later).

Toxoplasmosis	A protozoan called <i>Toxoplasma gondii</i> , which is transmitted through ingestion of undercooked meat and vegetables containing the protozoan oocysts.	Localized neurologic deficits, fever, headache, altered mental status, and seizures.
Coccidiosis	Coccidian protozoan parasites: <i>Isospora hominis</i> and/or <i>Isospora belli</i> . Which are transmitted through ingestion of infected substances.	Watery non-bloody diarrhea, crampy abdominal pain, nausea, anorexia, weight loss, occasional vomiting, weakness, and low grade fever
Cryptosporidiosis	A protozoan called ( <i>cryptosporidium</i> ), which is transmitted by person-to-person contact, contaminated water, food contaminants, and airborne exposures.	Profuse watery diarrhea, abdominal cramping, nausea, anorexia, weight loss, vomiting, malaise, fever, and myalgia
Herpes simplex virus (HSV)	A herpes virus. In persons with AIDS its occurrence is often as a result of a reactivation of an earlier herpes infection.	Red blister-like lesions that occur in oral anal and genital areas and may also be found in esophageal and tracheo-bronchial mucosa in AIDS patients, pain, bleeding, and discharge.
Herpes zoster (also called shingles or zona or zoster or and posterior ganglionitis).	Acute infection of Herpes zoster is caused by reactivation of chickenpox virus.	Small clusters of painful reddened papules that develop along the route of inflamed nerves, which may also be disseminated to involve two or more dermatomes.

Cytomegalovirus (CMV)	A herpes virus.	Unexplained fever, malaise, gastrointestinal ulcers, diarrhea, weight loss, swollen lymph nodes, hepatomegaly, splenomegaly, floaters, dyspnea (especially on exertion), and blurred vision (or ultimately blindness in patients with ocular infections).
Progressive multifocal leukoencephalopathy (PML)	Is caused by hyperactivation of a papovavirus that leads to gradual brain degeneration in AIDS patients.	Progressive dementia, memory loss, headache, confusion, and general weakness. Other neurologic complications such as seizures may also be exhibited.
Kaposi's sarcoma	Is a neoplasm that affects various parts of the body.	Cutaneous and subcutaneous painless nonpruritic tumor nodules that are pigmented and violaceous (red to blue), non-blanching and palpable. They may at early stages be mistaken for bruises, purpura or diffuse cutaneous hemorrhages.
Malignant lymphoma	Is a neoplasm that exhibits itself as an immune system cancer in which lymph tissues begin growing abnormally and spread to other organs.	Unexplained fever, weight loss greater than 10% of patient's total weight, night sweats, CNS disorders (esp. Confusion, lethargy, and memory loss), and/or gastrointestinal tract disorders (pain, obstruction, changes in bowel habits, and bleeding).



Cervical neoplasm

Is a neoplasm that usually affects women living with HIV.

Signs and symptoms at the early stage vary from those at advanced the stage:

Early stage: abnormal vaginal bleeding, persistent vaginal discharge, and/or post-coital pain and bleeding.

Advanced stage: pelvic pain, vaginal leakage of urine and feces from a fistula, anorexia, weight loss, and fatigue.,

Source of information: Springlisc Corporation (1995); IJNAIDS/WI I() (2001c)

**Appendix E: Details on Antiretroviral Generic Drugs Available in Kenya and Approved by the Ministry of Health.**

GENERIC NAME	KRANI) NAME	DOSAGE* AND PACKAGING »»»	FORM	WHOLESALE PRICE***	PRICE TO PATIENTS	NAME OF MANUFACTURER	OF
Efavirenz (EFV)	Stocrin	200mg caps, 90's		3762	3950	Merk Sharp & Dohme	
Indinavir (IND)	Crixivan	400mg ISO's	caps.	4515	4740		
Didanosine (DDI)	Videx	25mg tab, 60's		574	603	Bristol Myers	
	Videx	100mg tab, 60's		1044	1096	Sqibb	
Stavudine (D4I)	Zerit	30mg caps, 56's		304	320		
	Zerit	40mg caps, 56's		344	362		
	Zerit	1 mg/ml syrup, 200ml		776	817		
Zidovudine (AZT)	Retrovir	100mg tab, 100's		2024 & 2500	2231 & 2756	Glaxo Kline****	Smith
	Retrovir	200ml syrup		1363 & 1500	1503 & 1654		
AZT/3TC	Comhivir	300mg/150mg tabs. 60's		4692 & 6980	5173 & 7695		
Lamivudine (3TC)	Epivir	150mg tab, 60's		1464 & 4000	1614 & 4410		
	Epivir	400ml suspension.		830 & 1600	916 & 1764		
Zalcitabine DDC	Didanosine	75mg tab, 100's		10800		Roche	
Nelfinavir	Viracopl	250mg lab, 270's		23760			
	Viracopl	50mg/g syrup	144g	2519			
Saquinavir	Invirase	200mg caps, 270's		28339			

Nevirapine (NVP)	Viratnune Viramune	240ml syrup 200mg tab, 60's	1686 3460	1770 3633	Boehringer
Ritonavir	Norvir	100mg ca/w, 84's	6000	8400	Abbot

\*: Dosage given in milligrams or milliliters per

\*\*: Information given in the order of dosage in grams or milligrams, form (whether capsule or tablets or syrup or suspension) and packaging (number of capsules or tablets). Adequate information on syrups and suspensions was not available.

\*\*\*: Price to hospitals, treatment centres and NGOs

%\*\*\*.  $Q_{axo}$  with Kline's first prices (for both wholesale and recommended prices to patients) are access prices to public sector, NGOs and non-profit organization whereas second prices are wholesale prices to the private sector.

\*\*\*\*. Prices are at the discretion of the hospital.

*Caps*: Capsules; *Tab*: Tablets

**Sources of data:** East African Standard's 'THE BIG ISSUE' Monday, November 26<sup>th</sup>, 2001.

**Appendix F: Available Antiretrovirals Combinations and their Prices at Mater Hospital in Nairobi, Kenya.**

<b>ANTIRETROVIRAL DRUG COMBINATION</b>	<b>PRICE OF COMBINATION PER MONTH (KSHS)</b>
Stocrin 20mg (90) + Zerit 40mg (60) + Videx 100mg (60)	5597
Stocrin 20mg (90) + Combivir(60)	9163
Stocrin 20mg (90) + Retrovir (180) + Videx 100mg (60)	9831
Stocrin 20mg (90) + Zerit 40mg (60) + 3TC 150mg (60)	6114
Crixivan 40mg (180) + Zerit 40mg (60) + Videx 100mg (60)	6386
Crixivan 40mg (180) + Combivir(60)	9953
Crixivan 40mg (180) + Retrovir 100mg (180) + Videx	10620
Crixivan 40mg (180) + Zerit 40mg (60) + 3TC (60)	6904
Viracept 25mg (300) + Zerit 40mg (60) + Videx 100mg	29367
Viracept 25mg (300) + Combivir (60)	32933
Viracept 25mg (60) + Retrovir 100mg + Videx 100mg	33601
Viracept 25mg (300) + Zerit 40mg (60) + 3TC (60)	29884
Viramune 20mg (60) + Videx 100mg (60) + 3TC (60)	6403
Viramune 20mg (60) + Retrovir+1 Hivid 0.75mg (90)	19011
Viracept 25mg (300) + Retrovir 100mg + Hivid 0.75mg (90)	43098

**Source of data:** East African Standard's 'THE **BIG** ISSUE' Monday, November 26<sup>th</sup>, 2001.

## Appendix G: Post Hoc Test: Multiple Comparison for the Knowledge Test

### Scores

Multiple Comparisons

Dependent Variable: marks, knowledge

LSD

		Mean	Std. Error	Sig.	95% Confidence Interval	
		Difference				
		(I-J)				
(I) main	(J) main				Lower	Upper
carrier	carrier				Bound	Bound
subject	subject					
Geography	I/Scienc	26.8*	8.9	.004	9.11	44.57
	Biology	-4.3	3.6	.237	-11.41	2.87
	R.E	-0.7	3.6	.854	-7.74	6.43
	S.E.E.	1.8	8.9	.837	-15.89	19.57
H/Science	Geography	-26.8*	8.9	.004	-44.57	-9.11
	Biology	-31.1*	8.8	.001	-48.59	-13.63
	R.E	-27.5*	8.8	.002	-44.95	-10.05
	S.E.E.	-25.0*	12.0	.040	-48.85	-1.15
Biology	Geography	4.3	3.6	.237	-2.87	11.41
	H/Science	31.1*	8.8	.001	13.63	48.59
	R.E	3.6	3.2	.267	-2.82	10.04
	S.E.E.	6.1	8.8	.488	-11.37	23.59
R.E	Geography	0.7	3.6	.854	-6.43	7.75
	H/Science	27.5*	8.8	.002	10.05	44.95
	Biology	-3.6	3.2	.267	-10.04	2.82
	S.E.E.	2.5	8.8	.776	-14.95	19.95
S.E.E.	Geography	-1.8	8.9	.837	-19.57	15.89
	H/Science	25.0*	12.0	.040	1.15	48.85
	Biology	-6.1	8.8	.488	-23.59	11.37
	R.E	-2.5	8.8	.776	-19.95	14.95

\* [The mean difference is significant at the .05 level]