ASSESSMENT OF COPING STRATEGIES AMONG PEOPLE LIVING WITH HIV AND AIDS ON HIGHLY ACTIVE ANTIRETROVIRAL THERAPY IN KINONDONI MUNICIPALITY, DAR ES SALAAM

By

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A dissertation submitted in partial fulfillment of the requirement of the degree of Master of Public Health of Muhimbili University of Health and Allied Sciences

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CERTIFICATION

The undersigned certifies that he has read and hereby recommends for acceptance by the Muhimbili University of Health and Allied Sciences a dissertation titled: **Assessment of coping strategies among people living with HIV and AIDS on highly antiretroviral therapy in Kinondoni Municipality, Dar es Salaam,** in partial fulfillment of the requirement of the degree of Master of Public Health of the Muhimbili University of Health and Allied Sciences.

Dr. Switbert R. Kamazima

(Supervisor)

Date October 29, 2008

DECLARATION AND COPYRIGHT

I, **Dr Elias Johansen Muganyizi,** declare that this dissertation is my own original work and that it has not been presented and will not be presented to any other University for similar or other degree award.

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DEDICATION

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ACRONYMS

AIDS	Acquired Immunodeficiency Syndrome
CTC	Care and Treatment Center
ERSF	Economic and Social Research Foundation
GDP	Gross Domestic Product
HAART	Highly Active Antiretroviral Therapy
HIV	Human Immunodeficiency Virus
HKMU	Hubert Kairuki Memorial Universty
MPH	Master of Public Health
MoHSW	Ministry of Health and Social Welfare
MUHAS	Muhimbili University of Health and Allied Sciences
NACP	National AIDS Control Program of Tanzania
NKC	Natural Killer Cells cytotoxicity
PI	Principal Investigator
PLHA	People Living with HIV and AIDS
RA	Research Assistant
SPSS	Statistical Package for the Social Science
TACAIDS	Tanzania Commission for AIDS
THI	Tanzania Heart Institute
THIS	Tanzania HIV and AIDS Indicator Survey
UNAIDS	United Nations Programme on HIV and AIDS
U.S.A.	United States of America
VCT	Voluntary Counseling and Testing
WHO	World Health Organization

ABSTRACT

Success of treatment with HAART, requires people with HIV and AIDS to maintain nearly perfect adherence to prescribed regimen. Behaviour leading to effective utilization of HAART and clinical outcome is partly determined by psychosocial factors. Stress among PLHA is a psychosocial factor which impairs effort to maintain quality of life of PLHA on treatment. Coping strategies employed by PLHA on HAART in Tanzania are not known. The key objective of this study was to assess the coping strategies among PLHA and their influence on clinical outcome. In between the month of July and August 2008, a cross-sectional study was conducted at Mwananyamala Hospital and Sinza Health Centre. Data on demographic, medical, socio-economic characteristics and coping strategies adopted by PLHA on HAART were collected. Cross-tabulation and logistic regression analysis were run to ascertain the influence of coping strategies on clinical outcome. A total of 391 PLHA on HAART were interviewed, more than a half of the respondents 243 (62.1%) were females. Majority of PLHA were using adaptive coping strategies such as prayed for the healing power of Almighty God (religion), perceived HIV as same as other chronic disease (positive reframing) and made jokes about HIV disease (humor) which predicted good clinical outcome. Conversely, very few patients adopted maladaptive coping strategies like denial and behavioral disengagement predicted poor clinical outcome. it is recommended to the Ministry of Health and Social Welfare/the National AIDS Control Program that: 1) Counselors need to be trained on promoting psychosocial behaviours among PLHA for good clinical progress; 2) develop partnership with religious leaders to manage psychological factors that are important in the management of HIV and AIDS, and 3) there is a need to encourage and support entrepreneurial activities for PLHA that will boost their level of socio-economic status and keep them busy so as to promote positive reframing behavior.

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CHAPTER ONE

INTRODUCTION

1.1 Background

The human immunodeficiency virus (HIV) and acquired immunodeficiency syndrome (AIDS) pandemic is the greatest challenge to public health all over the world. Globally, there have been promising effort to address AIDS epidemic, including access to effective treatment and prevention programs. UNAIDS estimated that 38.6 million people worldwide were living with HIV and AIDS by the end of 2005 (UNAIDS, 2006). Each year around 4.1 million more people became newly infected with HIV and 2.8 million lost their lives to AIDS by 2005 (UNAIDS, 2006). Africa remains the global epicenter of AIDS epidemic. The sub-Saharan region carries the largest burden of epidemic.

However, the epidemic in this region is extremely severe in eastern and southern Africa. In South Africa, for example, it was estimated that 5.5 million people were living with HIV by 2005 and 18.8% of adults were living with HIV infection. Swaziland had the second world highest HIV prevalence of 33.4% by the end of 2001. Botswana had prevalence of adult HIV 24.1% by 2005, Lesotho with adult prevalence 23.2% by 2005, Zimbabwe with adult prevalence of 20.1% by 2003, Namibia with adult prevalence 19.6% by 2004, Zambia with adult prevalence of 17% by 2005, Mozambique with adult prevalence of 16.1% by 2005, Malawi 14.1% (2003), Democratic Republic of Congo

3.2% (2005). Countries in East Africa have adult prevalence as follows: Kenya 7% (2003), Uganda 6.7% (2005), Burundi 3.3% (2004) and Rwanda 3.1% (UNAIDS, 2006).

In Tanzania, the first three cases of HIV were reported in Kagera in 1983 and 1.4 million people were living with HIV by 2005 (UNAIDS, 2006). It makes HIV and AIDS a serious public health problem in Tanzania mainland with the prevalence of 7%: prevalence among women is higher (8%) than among men (6%). The overall HIV prevalence in urban areas is higher (5.5%) than that of the rural areas 2.5% (TACAIDS, 2005). The HIV epidemic shows strong regional variation. Regions with the highest HIV prevalence include: Mbeya 14%, Iringa 13%, Dar es Salaam 11%, Mtwara 7.4%, Kilimanjaro and Coastal regions 7.3%. (TACAIDS, 2005). HIV is the second cause of morbidity and mortality in Tanzania following the malaria epidemic (TACAIDS, 2005).

The HIV infection is mostly affecting people of the age group 20–49 (TACAIDS, 2005). This is the most productive age group in the country. Hence, it reduces productivity and exacerbates poverty because majority of AIDS patients spend most of their time in bed and a lot of resources (money and many hours) are spent for hospital bills, debts incurred during HIV related illness, families run bankruptcy, children fail to get school fees, reduction of labour in agricultural industry and in public service. Recent projection from Economic and Social Research Foundation (ESRF, 2003) shows that by 2015, the Tanzanian economy will be 8.3 percent smaller and per capita GDP will be around 4 percent lower as a result of HIV and AIDS (URT, 2005). The government spends a lot

of money to provide free medical care to people living with HIV and AIDS (PLHA) as in the case of Tanzania. Therefore, HIV and AIDS epidemic is a serious threat to the country's social and economic development.

The HIV type 1 (HIV-1) is the causative agent of AIDS. HIV belongs to a subgroup of viruses known as lentiviruses or "slow viruses" (Levy et al., 1985). The progression of infection of lentiviruses is characterized by a long interval between initial infection and the onset of serious symptoms. During this interval, CD4 cells whose receptors provide a portal for the virus, become disabled and die. Healthy CD4 (T-helper) cells normally signal other cells such as cytotoxic T and B cells to mount an immune response. When the CD4 count in blood falls below $500/mm^3$, approximately half of the immune system reserve has been destroyed. At this point minor infections such as cold sores (herpes simplex) and fungal infections such as vaginal candidiasis may begin to appear. When the CD4 cell count falls below $200/mm^3$ life threatening opportunistic infections and different types of cancer begin to occur. AIDS, the end stage of HIV infection, is defined by a CD4 cell count of less than $200/mm^3$ or the presence of a serious life-threatening infection such as pneumocystic carinii pneumonia (PCP) or a cancer such as Kaposi's sarcoma (Poli et al., 1993) in an HIV seropositive individual.

Individuals infected with HIV show a wide variation in physical disease progression. Some HIV infected individuals develop symptoms rapidly, whereas others remain free of AIDS symptoms for 10 to 15 years even in the absence of a combination therapy

(Rutherford et al., 1990). The sources of individual variability in HIV progression remain unknown but may be due to some combination of biological (Harrer et al., 1996) and psychosocial factors (Leserman et al., 1999). For example, better social support is related to slower rate of decrease of CD4 T-cell count (Solano et al., 1993, Theorell et al., 1995), slower progression to AIDS (Leserman et al., 1999, Leserman et al., 2000) and longer survival (Blomkvist et al., 1994). Avoidant coping, life stress, depressed mood and feeling hopeless, have been related to increased disease progression in HIV by accelerating CD4 cell count decline and increase in HIV viral load (Ironson et al., 2005).

Folkman (1984) defined coping as cognitive and behavioral efforts made by a person to alter or manage the problem(s) caused by specific stressful situation. Different types of stressors situations demand different types of coping strategies. Effective coping has been associated with better quality of life (Folkman, et al., 1992, Friedland, et al., 1996) and reduction of risk behavior. Types of coping strategies, such as active (non-avoidance) coping strategies which include acceptance of HIV status, making jokes about the disease, having a positive perception about the disease and taking action to try make the situation better have been associated with better response to stress (Carver, et al., 1993). By contrast, other coping strategies, such as passive (avoidance) coping strategies which include refusing to believe that one is infected with HIV, despair to deal with the stressing situations, and avoiding coping have been associated with poor disease adjustment (Carver, et al., 1993). Coping is typically thought to be adaptive if it reduces

immediate stress and promotes well being (Matheson, et al., 2007). Coping strategy is said to be maladaptive when it increases the stress and poor health outcome.

The Tanzanian government started implementing antiretroviral therapy program in 2004 at the national level. Access to treatment and care has increased hope of living longer life than ever before the advent of Highly Active Antiretroviral Therapy (HAART) among PLHA. The progressive expansion of access to HAART is expected to significantly increase the survival of HIV infected individuals.

The introduction of HAART has dramatically reduced the morbidity and mortality among PLHA (Lundgren and Mocroft, 2006). Successful antiretroviral therapy is marked by sustained suppression of HIV viral load to near undetectable levels and may be accompanied by immune reconstitution including an increase in the number of CD4 cell count. On the one hand, adherence to HIV treatment regimen is a core element to viral suppression. On other hand, non adherence has been directly associated with treatment failures (Paterson et al., 2000), viral rebound, which leads to the need for regimen switching.

Adherence to HAART is centrally determined by behavior of individuals. The determination to practice certain behavior depends on how one perceives its benefit. HIV infected and AIDS patients vary on how they cope with the disease. Positive (active) coping strategies among PLHA have been associated with positive behaviors which

promote health of individuals like being adherent to the use of HAART and usage of condom to protect themselves from re-infection with the different HIV strains. The meaning of illness affects coping behavior and impacts the psychosocial wellbeing. Steeves (1992) observed that it is the meaning of individuals' construct, which makes coping behavior possible. The meaning refers to the individual's understanding of the implication an illness has for his/her identity and for the future (Mead, 1934 as cited by Fife, 1995). The interpretation, therefore, influences behavior, coping and adaptation of a stressor (Folkman, 1984). People who perceive that HAART is beneficial and bring hope of life to them are expected to have good adherence.

1.2 Problem of Statement

Chronic illnesses such as cancer and AIDS cause permanent change in the persons' ways of life due to stress and adapting to cope with the situations (Rustoen, 1995). The ultimate results of the chronic illness will depend on how an affected individual perceives and interprets the problem of his/her illness. Once one perceives that the situation is a threat, s/he will subsequently develop health behavior with the intention to neutralize the stressful conditions s/he is facing (Backer, 1974). The developed health behavior can either be adaptive which results into health life and wellbeing or maladaptive which may continually encourage distress and illness (Shaw, 1999). The behavior following perceived benefit of alternative solution like provision of HAART will result to its good adherence (Remien et al., 2003, Golin et al., 2002).

Success of treatment with HAART requires that people with HIV maintain nearly perfect adherence to the prescribed regimen. That is, higher than 95% level of adherence is necessary to achieve suppression of HIV replication (Paterson et al., 2000). Therefore, sustained adherence is important for the successful treatment outcome. Several studies conducted in other parts of the world, found that non adherence is associated with a number of factors like African ascendance (Kleeberger et al., 2001, Singh et al., 1996), psychological factors such as depression, excessive drinking (Tuldra et al., 2000), drug use and high levels of stress (Chesney et al., 2000, Singh et al., 1996). Different behaviour used with PLHA to cope with the HIV and side effects of HAART have

different health outcome. A study conducted in Germany, found that maladaptive coping strategies like lack of social support, denial, self-blame, poor relationship with health workers are associated with non-disclosure of HIV status to their significant ones and non-adherence. However, adaptive coping strategies like active seeking social support or information are associated with good adherence (Bader et al., 2006).

Coping strategies employed by PLHA on HAART in Tanzania are not known. Since 2004, Tanzania started implementing HAART program nationwide for the purpose of increasing quality of life among PLHA. Currently, Tanzania is scaling up service for utilization of HAART program among PLHA. Efficiency of the program outcome will be measured by the success in reduction of morbidity and mortality among PLHA. In Tanzanian context it raises a need to understand various factors that may affect the adherence of HAART among PLHA. Various causes of non-adherence of HAART among PLHA in Tanzania have been attributed to several factors like side effect of drugs, pill burden and poor access to CTCs. Limited considerations has been paid to psychosocial factors associated with non-adherence in Tanzania. Effective treatment outcome of HAART utilization is partly determined by psychosocial factors. Studies are increasingly documenting that stress affect the progress of an individual with HIV and AIDS even if one is put on HAART (Rutherford, et al., 1990, Vosvick, et al., 2003). Hence, the success of HAART scaling up program needs to consider psychosocial factors which affect the patients' progression while on HAART and their adherence behaviour. Therefore, this study examined different coping strategies adopted by PLHA on HAART and their influence on the clinical outcome of HAART.

1.3 Rationale of the study

Since the scaling up of care and treatment services in Tanzania is still in its infancy stage, it is essential to understand some of psychosocial factors that affect clinical progress of PLHA on HAART. The understanding of the variation of intrapersonal interpretations of illness and their association to particular coping strategies will enable various intervention programs to advocate behaviours which are beneficial to PLHA

Most of published studies which have documented psychosocial factors which affect patients' disease progress due to HIV/AIDS have been conducted in the developed countries like USA, UK, Norway, Finland and German. In Africa, there is a big gap of knowledge on psychosocial factors that play important role in the progress of AIDS illness among PLHA despite the fact that sub-Saharan Africa bears the biggest burden of HIV infection in the world (UNAIDS, 2006). Lie's (1996) study reported this gap and notes that the most striking fact in previous research on the importance of coping with HIV and AIDS in the African context hardly exists. Certainly, findings from developed countries on coping strategies employed by PLHA might not bear the same meaning in the African context. People's efforts to strive for the positive ways of living with HIV and AIDS require not only effective treatment regiment but also supportive socioeconomic conditions and such conditions may not be available to poor PLHA in poor resource countries (Russell, et al., 2007).

Most of Africans live below extreme poverty line (defined by the World Bank as anyone living on below $ 1 a day) where getting basic living needs like food, shelter and clean

water becomes the big issue. Access to information in poor resource country like Tanzania, sometimes proves difficulty. Very few people seek information about HAART side effects and possible alternatives to particular treatment therapy. People's ignorance to useful information is a reason why some PLHA are non-adherent to HAART (Bader et al., 2006). This study attempted to give an insight to subsequent studies in exploring the direct causes of poor adherence of HAART due to psychological factors in the Tanzanian context. The understanding of psychosocial contribution to the well being and disease progression in PLHA provides light for the implementation of focused HIV interventions to bear fruitful results on the reduction of morbidity and mortality due to HIV and AIDS and better quality of life.

1.4 Objectives

1.4.1 Broad objective

The broad objective of this study was to assess coping strategies among PLHA on HAART in Kinondoni Municipality

1.4.2 Specific objectives

This study fulfilled the following specific objectives:

1. To determine the coping strategies adopted by PLHA on HAART in Kinondoni Municipality.
2. To establish the influence of coping strategies on clinical outcome of HAART among PLHA in the study area.

1.5 Research question

This study attempted to answer two key questions:

- What are the different coping strategies adopted by PLHA on HAART in Kinondoni Municipality?
- To what extent do coping strategies influence the clinical outcome among PLHA on HAART?

1.6 Study limitations

The interpretation of the study findings must be balanced against a number of limitations in the current study design. Without longitudinal data, it was difficult to determine the causal nature of the relationships. It was possible that the sample drawn from public health facilities was not a representative of private health facilities. Collecting data within the CTCs venues probably could have caused unreliable responses from some respondents. For example, most of the PLHA had been counseled and restricted from alcohol use while on HAART. This might explain, in part, why majority of the respondents answered "No" to this question. Despite these limitations, the study findings have implications to anti-HIV and AIDS interventions conducted in this country.

CHAPTER TWO

LITERATURE REVIEW

2.1 Global overview of coping strategies of HIV and AIDS among PLHA

Psychological factors such as coping strategies of stress caused by HIV infection and AIDS have had a tremendous effect to the well being of PLHA. Several studies conducted in various parts of the world have reported that the discrepancy of survival and disease progression of HIV infection existing among PLHA, is partly related with psychosocial factors (Leserman et al., 1999, Ironson et al., 2005) or due to biological factor (Harrer et al., 1996). Better social support has been associated with less mood disturbance (Turner, et al., 2002) and related to slow decrease of CD4 cell count among PLHA without being on HAART medication (Theorell, et al., 1995). People with HIV and AIDS have several causes of stress including job loss, interpersonal rejection, stigma, bereavement, symptom onset (Leserman, 2003a) and side effects of HAART.

A study conducted by Glaser et al. (1999) showed that both acute and chronic stress impair the immunity of individuals. The persistence of chronic stress due to HIV and AIDS increases the rate of decrease of CD4 cell count (Glaser et al., 1999). Susanne & Gregory (2004) analyzed many research reports and concluded that chronic stressors are associated with suppression of both cellular and humoral immune system through reducing natural killer cell cytotoxicity, suppression of lymphocyte proliferation response and blunt humoral response (Cohen, 2001 cited by Susanne & Gregory 2004).

The attempt to find an association between stress and disease progression in patients with AIDS is on debate. For instance, a cohort study conducted in San Francisco-U.S.A. reported that depression predicted CD4 T-lymphocytes decline and mortality (Barack, et al., 1993). Analysis of the Multicenter AIDS using the same cohort study failed to observe an association between depression and decline of CD4 T-lymphocyte, disease progression or death (Lyketson, et al., 1993).

Coping with the stress due to HIV and AIDS is the effort employed by PLHA to avoid stressing situation. A study conducted in the U.S.A. concluded that the meaning individuals develop concerning their illness has an impact on their psychosocial well being and determines the ways of coping with the life threatening illness (Fife, 1995). A study conducted in Atlanta by Farber, et al. (2003) found that positive meaning of illness was associated with higher level of psychological adjustment to the disease and had protective health effect. The use of avoidant coping strategy was strongly related to construction of negative meaning to the illness (Fife, 1995). The individuals' interpretations for threat of illness influence their behavior – the way of coping and adaptating HIV and AIDS situations (Folkman, 1984).

Much has been written about the role of coping in buffering the psychological impact of stress and alteration of the disease progression (e.g. cancer and AIDS). Coping has a direct role in PLHA preventing them from getting depression and HIV progression to AIDS (Leserman et al., 1992). Avoidant coping strategies such as behavioral

disengagement, denial, and self distraction are associated with poor health outcome (Folkman, et al., 1991; Laubmeir & Zakowiski, 2004). A 2 year longitudinal study conducted by Ironson et al. (2005) in the U.S.A., concluded that avoidant coping strategies predicted an accelerated decline in CD4 cells and an increase in HIV viral load. Another study conducted in the U.S.A. by Wong, et al. (2006)) reported similar findings for the case of denial and behavioral disengagement coping strategies that were associated with increased risk of developing illness symptoms.

However, in the same study they found that self-distraction was not related to any illness symptoms. Study conducted in the U.S.A. by Leserman, et al. (1992) showed that denial as a coping strategy was associated with the depression and was more prevalent among the black Americans. Yet another study conducted by Fife, et al., (1992) in the same area reported contradicting results that denial coping strategy was associated with development of positive meaning of illness. It would be important, therefore, to establish how coping strategies adopted by PLHA in Tanzania influence their clinical outcome.

Satisfaction with social support has been reported to predict a greater decline in the number of physical health symptoms (Ashton, et al., 2005). Social support is defined as practical, emotional or informational help that people receive from friends, the family, partners and organizations (Ashton et al., 2005). Financial support improves coping among people having chronic illness. For example, a study conducted in Norway by

Ashton, et al. (2005) found that patients who had formal education had better coping strategies to breast cancer.

Religion, which is sometimes referred to spirituality, has been reported to lead to a positive life attitude (Rustoen, 1995), a positive effect on chronic disease progress and being efficacious in improving quality of life and well being (Inez & Wantana, 2007). Studies conducted by Coleman, (2004) and McCain, et al., (2006) reported that being involved in spiritual activities was negatively correlated with emotional distress and positively correlated with quality of life. McCain, et al., (2006) found in their five years clinical trial study that research participants in spiritual growth group had increased cytokines production, increased lymphocyte proliferation and increased natural killer cells (NKC) cytotoxicity. While a study conducted by Cohen, (2001) in the U.S.A. documented that chronic forms of stress were associated with reduced NKC-cytotoxicity, suppressed lymphocyte proliferation response and blunted humoral response to immunization.

People who use recreational drugs like alcohol have been reported to have poor coping strategies (Ashton et al., 2005), which is also linked with poor adherence to HAART (Robert, et al., 2007). The study conducted in North Carolina, U.S.A. by (Leserman et al., 1992) found that planning a course of action and reframing stress to maximize personal growth coping strategies were associated with adaptive outcome with HIV threat.

2.2 Definitions and description of coping

Lazarus & Folkman (1984) defined coping as cognitive and behavioral effort made by a person to alter or manage the problem(s) caused by specific situation. Specific situations can either be external and or internal demands appraised as taxing and exceeding the individual's resources (Folkman, 1984). Coping is described as passive coping when it manifests as avoidant behavior like refusing to accept the illness condition (denial), improvising means of forgetting the problem (self distraction), giving up with the life of living with a problem (behavioural disengagement) and substance use. Active coping is a non avoidant behavior like the use of social support, seeking more information about the illness, trying hard to come up with a suitable solution, accepting the illness condition and getting spiritual support. Functionally coping focuses on managing or altering the source of stress (problem-focused coping) and to regulate the emotional response (emotion-focused coping) (Lazarus, 1985, Folkman and Lazarus, 1980).

Lazarus and Folkman (1984) consider coping to be a process that changes overtime across situations contrary to trait approaches that view it more as a stable personality dimension. Personality has been shown to predict the coping strategy. Neuroticism, for example, is associated with increased use of hostile reaction, escapist fantasy, self blame, withdrawal and wishful thinking strategies which are associated with poor health outcome (McCrae, 1986, Costa and McCrae, 1986). The same study showed that extroverts are likely to use rational action and positive thinking strategies which are associated with better outcome. Coping is said to be adaptive when it reduces immediate

stress and promotes well being. For example, use of religion, emotional support and positive reframing to perceive a problem positively have been associated with reduction of stress. Hence, adaptive coping is regarded to be a healthy coping strategy such that more active coping strategies indicate better adaptation to stress (Matheson et al., 2007).

Maladaptive coping strategies are the non health coping strategies which increase stress and demote the well being of individuals. For instance, using coping strategy with avoidance behaviour like disengagement, self distraction and denial are related to greater total mood disturbance, low self-esteem and poor health outcome. Coping resources are defined to be relatively stable characteristics of an individual's temperament and the conditions available when an individual evaluates a situation and develop coping strategies (Billings and Moos, 1982; Nott, et al., 1995). For instance, coping resources to the side effects of HAART is having enough information about the drugs and alternative treatment, which reduce the degree of stress experienced by PLHA.

2.3 Causes of stress in PLHA on HAART

Several causes of stress among PLHA on HAART have been documented. Bereavement can be caused by the loss of the child (ren) or a partner. Some PLHA get challenges of life constraints when they lose their jobs. Some employers particularly in the private sector terminate employees who are bedridden for long time. Onset of AIDS symptoms such as Herpes Zoster, significant weight loss, tuberculosis (TB) infections and oral sores cause serious stress among PLHA. Interpersonal rejections from stigmatizing community causes serious stress (Leserman, 2003b). Some studies have documented that worries about the future and fear of death, HIV stigma (Robert, et al., 2007), economic (financial) insolvency, side effects of HAART, shame connected to the disease, experience of being rejected or abandoned and a sense of being a burden to others (Lie, 1996) to be other causes of stress among PLHA.

In the next chapter (Chapter Three), I present the methodology used to assess coping strategies among PLHA on HAART in Kinondoni Municipality, Dar-es-Salaam region.

CHAPTER THREE

METHODOLOGY

3.1 Study design

This was a cross sectional descriptive study conducted in Mwananyamala hospital and Sinza health centre in Kinondoni Municipality. The study began in the last week of July and ended in the second week of August 2008. The study recruited PLHA on HAART who had registered at Mwananyamala and Sinza care and treatment center (CTC).

3.2 Study area

Kinondoni Municipal is one of the three Municipalities in Dar es Salaam region. According to the 2002 population national census, Dar es salaam region had a total population of 2,497,940 of which 1,236,864 (45.9%) were female (URT, 2003). The current estimated population of Dar es salaam is 4 million (RMO, 2007).

Dar es Salaam region was chosen to be a study area because its PLHA have better access to laboratory services which perform CD4 cell count – a service that is limited in upcountry regions. It was assumed that the majority of PLHA on HAART in Dar es Salaam knew or had their CD4 count recorded, which was an important variable used in the analysis of data collected. Kinondoni Municipality was chosen because it provides

both urban and semi-urban settings that provided different opportunities to develop various coping strategies to HIV and AIDS among PLHA on HAART.

Kinondoni Municipality has 10 CTCs. Two out of ten are government-owned facilities. The rest eight are private facilities. Basing on the time constraint, the study was conducted in government facilities. Most of PLHA who attend private facilities are busy individuals at their work places. They normally seek services at their convenient time, which makes private facilities to have few numbers of patients who attend CTC to meet the number of patients targeted by this study. Again, accessibility of their medical information in the private facilities is relatively difficult as compared to government facilities. PLHA in the government facilities come for treatment within pre-scheduled time. In addition, government CTCs facilities attend more clients daily than private facilities. For these reasons, clients registered at Mwananyamala and Sinza CTCs were recruited for this study.

The population sample for this study was obtained through stratified random sampling method. The study took into consideration equal representation of gender, male and female strata. In each of selected CTC, half sample size of research participants was recruited. The ratio of male and female studied at the CTC was determined by their numbers in the register. The sample was randomly drawn from daily appointment register for the period of the fieldwork. For every subsequent interviewing day, the principle investigator got list of CTCs attendees, and drew 20 research participants

randomly from each CTC for next interviewing day. The ratio male and female was determined basing on the expected number of attendees. The daily number of male and female to be interviewed was determined basing on their attendance ratio at their CTCs.

3.3 Study population

The study population included all PLHA (≥ 18 years of age) on HAART in Kinondoni Municipality.

3.4 Sample size estimation

The major focus of the study was to establish the influence of coping strategies on clinical outcome among PLHA on HAART. Sample size of PLHA on HAART above or equal to 18 years old who were recruited in the study was determined by using the proportional formula as follows:

$$n = \frac{z^2 p\,(100 - p)}{\delta^2}$$

Where; n = desired sample size

z = percentage of standard normal distribution corresponding to 95% of confidence interval, which is 1.96

δ = marginal error/absolute precision of p which is 5%

p = expected proportion of PLHA on HAART coping with the HIV and AIDS

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Therefore,

$$n = \frac{(1.96)^2\ 50(100\text{-}50)}{5^2}$$

n = 384 as minimum sample sample size.

n = 422 sample size which included 10% of non response rate (attrition rate). Therefore, maximum sample size for this study was 422 PLHA on HAART.

3.5 Selection, training of research assistants and pre-testing of study tools

The selection of research assistants (RAs) was based on having a medical background because the research work required extracting information from the patients' records (files). Three RAs were recruited. Prior to the actual field work, the RAs had a two days training. During this training, the RAs were introduced to the study, its objectives and the methodology. The RAs were familiarized with the questionnaire and acquitted them with the research ethics. The pre-testing of the research instrument was conducted Temeke Hospital CTC that was not included in this study. Results from the pre-testing facilitated finalizing the study tool.

3.6 Data collection

The PI and RAs collected data for three weeks. Structured interviews with open and close ended options were used. All questions were asked in Swahili language. However, English version of questions was available for those participants who were conversant for the language. The following were the information collected: socio-economic and

demographic characteristics, medical history and physical health characteristics. Coping strategies used by PLHA on HAART and the constructed meaning of illness towards HIV infection and AIDS (Fife, 1995). Coping strategies were measured by using a Brief COPE instrument (Carver, 1997) which has 28 items of questions that measures 14 domains (coping strategies) of coping scale which includes active coping, religion, using emotional support, acceptance, humor, positive reframing, planning, using instrumental support, self distraction, denial, venting of emotions, substance use, behavioral disengagement and self blame. Each coping strategy has two question items rated on a 4-point Likert scale ranging from 0-3 like 0 (I did not do this at all), 1 (I did this rarely), 2 (I did this often) and 3 (I did this very often) and some questions rated on the same range of scale from 0-3 like 0 (disagree), 1 (undecided), 2 (agree) and 3 (strongly agree). During the field work the PI counterchecked the accuracy and completeness of questionnaire; after which data was entered in a computer.

3.7 Data analysis

The responses to both open and closed ended questions were coded and entered into a computer using SPSS version 15. Descriptive analysis of frequencies was run for each demograpthic, socio-economic and medical characteristics. Data frequency table were used to summarize the analyzed data. Association between dependent and independent variables was considered significant at p-value < 0.05. The dependent variable was current level of CD4 cell count. Independent variables were demographic, socio-

economic, medical characteristic and coping strategies. Coping strategies included the following factors: active coping, religion, using emotional support, acceptance, humor, positive reframing, planning, using instrumental support, self distraction, denial, venting of emotions, substance use, behavioral disengagement and self blame. Cross tabulation and regression logistic analyses were used to predict the association between variables.

3.8 Ethical issues

Ethical clearance for the study was sought from the Research and Publications Committee of Muhimbili University of Health and Allied Sciences (MUHAS). In each administrative level the entire respective leadership was informed and permission for conducting the study in their respective areas was obtained both in writing and verbally. The participants were asked for their willingness to participate in the study after they were informed about the purpose of the study. Every participant was assured of confidentiality and granted that neither will his/her identity be recorded nor would this information be used for the purpose than this study.

CHAPTER FOUR

RESULTS

4.1 Socio-demographic characteristics of the respondents

Initially, it was planned to interview a maximum sample of 422 PLHA on HAART in the study area. However, 13 (7.3%) of the respondents selected for interviewing during the last two days of field work refused to participate in this study. As a result, a total of 391 PLHA were interviewed at Mwananyamala hospital and Sinza health centre CTCs in the last week of July and the first two weeks of August, 2008. Among PLHA interviewed (see Table 1), 148 (37.9%) were males and 243 (62.1%) were females.

The age of the respondents ranged between 19 to 76 years with a mean age of 38.26 and median of 37 years. Regarding marital status, 150 (38%) were married, 101 (26%) had never married, 47 (12%) widowed, 76 (19.4%) were either divorced or separated and 17 (4.3%) were cohabiting. Muslims were 193 (49%) of respondents, 95 (24%) were Catholics, 71 (18%) were Protestants, 29 (7%) were the Born Again and only 3 (0.8%) of respondents did not belong to any religious affiliation.

4.2 Socio-economic characteristics of the respondents

Table 1 also shows the socio-economic characteristics of respondents. Most of respondents had primary level of education 281 (72%) and the lowest proportions of respondents 8 (2.1%) were diploma holder and graduates or postgraduates. The observed

trend of level of education can be explained by the fact that majority of PLHA with low education level are poor and they can not afford to be treated at the CTCs located in the private facilities. It is assumed that majority of graduates have better income and some are covered by national health Insurance fund which facilitates them to be managed to health facilities of their preference. A large proportion of respondents 172 (44%) had their private business and 3 (0.8%) were minority who keeps cattle.

Most of respondents had average monthly income of less than one hundred thousand Tanzanian shillings (Tshs.100, 000/=). The lowest proportion of 4 (1.1%) had average monthly income of above five hundred thousand (Tshs.500, 000/=) and only 75 (19%) of respondents did not earn any income.

Table 1: Characteristics of the respondents (n=391)

Characteristics	Male (%)	Female (%)	Total (%)
Marital status			
Married	70 (46.7)	80 (53.3)	150 (38.4)
Never married	31 (30.7)	70 (69.3)	101 (25.8)
Divorced	4 (9.3)	39 (90.7)	41 (11.0)
Separated	21 (63.6)	12 (36.4)	33 (8.4)
Widowed	16 (34)	31 (66)	47 (12.0)
Cohabiting	6 (37.9)	11 (64.7)	17 (4.3)
Age group			
15 – 24	4 (28.6)	10 (71.4)	14 (3.6)
25 – 34	32 (22.9)	108 (77.1)	140 (35.8)
35 – 44	66 (43.4)	86 (56.6)	152 (38.9)
45 – 54	29 (46.8)	33 (53.2)	62 (15.9)
55 – 64	14 (77.8)	4 (22.2)	18 (4.6)
65 +	3 (60)	2 (40)	5 (1.3)
Religion			
Catholic	40 (42.1)	55 (57.9)	95 (24.3)
Protestant	32 (45.1)	39 (54.9)	71 (18.2)
Muslim	63 (32.6)	130 (67.4)	193 (49.4)
Born again	12 (41.4)	17 (58.6)	29 (7.4)
None	1 (33.3)	2 (67.7)	3 (0.8)
Education level			
None	9 (22.5)	31 (77.5)	40 (10.2)
Madrasa	1 (33.3)	2 (67.7)	3 (0.8)
Primary	108 (38.4)	173 (61.6)	281 (71.9)
Secondary O-level	19 (38)	31 (62)	50 (12.8)
Secondary A-level	7 (77.8)	2 (22.2)	9 (2.3)
Diploma / Degree / Postgraduate	4 (50)	4 (50)	8 (2.1)
Occupation			
Peasant / Cattle keeper	14 (58.3)	10 (41.7)	24 (6.2)
Government employee	7 (36.8)	12 (63.2)	19 (4.9)
Employee in private sector	47 (61)	30 (39)	77 (19.7)
Private business	55 (32)	117 (68)	172 (44)
Not employed	12 (15.2)	67 (84.8)	79 (20.2)
Others	13 (65)	7 (35)	20 (5.1)
Monthly average income (Tshs)			
None	10 (13.3)	65 (86.7)	75 (19.2)
1 – 100,000	67 (33.7)	132 (66.3)	199 (50.9)
100,001 – 300,000	59 (60.8)	38 (39.2)	97 (24.8)
Above 300,000	12 (60)	8 (40)	20 (5.2)
Total	**148 (37.9)**	**243 (62.1)**	**391**

4.3 Functional status and associated level of CD4 cell count of the respondents

Table 2 shows the functional status and associated levels of CD4 cell counts of the respondents. Majority of respondents were having a normal health working functional status 309 (79%) and among them only about two thirds 187 (61%) had good clinical outcome of CD4 cell count above 200, very few respondents 7 (1.8%) were bed ridden with more than two third 5 (71.4%) respondents had less than 200 CD4 cell count and 74 (18%) were ambulatory and weak in physical functioning capability and among them 37 (50%) were either having CD4 cell count below 200 or above 200. About two thirds of the respondents (58%) had improved their health status on HAART and their current CD4 cell counts were above 200 cells/mm^3.

Table 2: Medical characteristics of the respondents

Characteristics	0 – 200 cells/mm^3 (%)	Above 200 cells/mm^3 (%)	Total (%)
Bed ridden	5 (71.4)	2 (28.6)	7 (1.8)
Ambulatory	37 (50)	37 (50)	74 (18.9)
Working	121 (39.3)	187 (60.7)	308 (79)
Missing			2 (0.3)
Total	163 (41.7)	227 (58.1)	391

Figure 1 presents the duration of respondents on HAART. Most of respondents (30%) had been on HAART for a period of 7 – 12 months, (22.8%) of respondents had been on HAART for (13 – 18) months and the least duration was 0 – 2 months (5.1%).

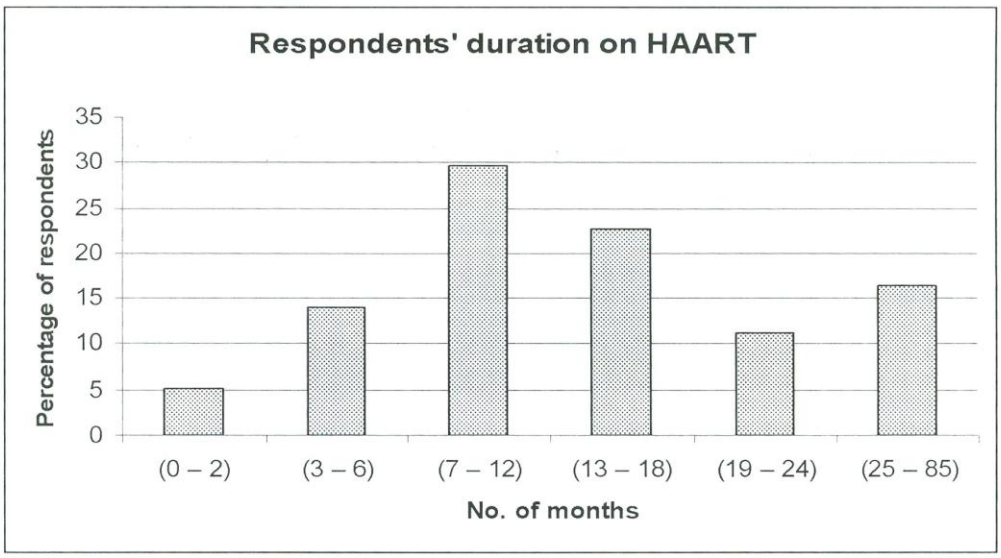


Figure 1: Respondents' duration on HAART

4.4 Association of socio-economic characteristics and current level of CD4 cell count

This association was made to ascertain the relationship of socioeconomic variables and their influence on the current CD4 cell count. Literature shows that income and sex have greater impact on individuals CD4 cell count. Table 3 shows the association of socio-economic characteristics and the current level of CD4 cell count of respondents.

The clinical outcome has been classified as either being poor with less than 200 CD4 cell counts or good with above 200 CD4 cell count. Large proportion of females 151 (62%) had CD4 cell count above 200 as compared to 91 (38%) of males. The observed difference was statistically significant with the p-value of 0.03. The monthly average income observed to be higher among people with CD4 cell count above 200 than those who had CD4 cell count below 200. However, chi square test at 95% confidence interval showed that this observed association between income and level of CD4 cell count was not statistically significant with a p-value of 0.15. In this study education, age, occupation, marital status and religion affiliation of respondents did not show any association with good clinical outcome.

Table 3: Association of socio-economic characteristics and current level of CD4 cell count (n=390)

Characteristics	**CD4 cell count (cells/mm^3)**			
Sex	**0 – 200**	**Above 200**	**Total**	**p-value**
Male	72 (48.6%)	76 (51.4%)	148	
Female	91 (37.6%)	151 (62.4%)	242	**0.03**
Monthly average income (Tshs)				
None	36 (48.6%)	38 (51.4%)	74	
1 – 100,000	74 (37.2%)	125 (62.8%)	199	
Above 100,000	53 (45.3%)	64 (54.7%)	117	**0.15 (ns)**

* missing response n = 1, ns = not significant

4.5 Association of adaptive coping strategies and level of CD4 cell count

I cross tabulated adaptive coping strategies versus the current CD4 cell count in order to establish the documented relationship between adaptive coping strategies and the respondents' clinical outcome. The association of adaptive coping strategies and the clinical outcome is displayed in Table 4. Religion, humor and positive reframing coping strategies were associated with the good clinical outcome (having CD4 cell count above 200). About two third 163 (62%) of respondents who found comfort in their religion and prayed for forgiveness of their sins and healing power of God had CD4 cell count above 200. Two third of respondents who used humor coping strategy had good clinical outcome with CD4 cell count above 200.

Most of respondents with good CD4 cell count were making jokes 86 (67%) and fun 90 (66%) about HIV problems. The observed difference between people who made jokes and fun about HIV problems and those who did not is statistically significant with the p-value of 0.012 and 0.027 respectively. About two thirds 158 (65%) of respondents who perceive HIV as the same as other chronic diseases had good clinical outcome (CD4 cell count above 200). Association between venting coping strategy and good clinical outcome was not statistically significant when cross tabulated with chi square test at 95% confidence interval.

Table 4: Association of adaptive coping strategies and clinical outcome (Current level of CD4 cell count)

Adaptive coping strategies	Current CD4 count (cells/mm^3)		Total	P-value
	0 – 200	Above 200		
Religion				
Did not find comfort in their religion	61 (48.8%)	64 (51.2%)	125	
Found comfort in their religion	102 (38.5%)	163 (61.5%)	265	**0.054** (bs)
Did not pray for the healing power of God	44 (57.1%)	33 (42.9%)	77	
Prayed for the healing power of God	119 (38%)	194 (62%)	313	**0.002**
Humor				
Did not make jokes about HIV disease	121 (46.2%)	141 (53.8%)	262	
Made jokes about HIV disease	42 (32.8%)	86 (67.2%)	128	**0.012**
Did not make fun of HIV problems	116 (45.8%)	137 (54.2%)	253	
Made fun of HIV problems	47 (34.3%)	90 (65.7%)	137	**0.027**
Positive reframing				
Did not perceive HIV as the same as other chronic diseases	76 (52.4%)	69 (47.6%)	145	
Perceived HIV as the same as other chronic diseases	87 (35.5%)	158 (64.5%)	245	**0.001**
Venting				
Did not talk all about the way they got HIV so as to relief their unpleasant feelings	70 (39.5%)	107 (60.5%)	177	
They talked all about the way they got HIV so as to relief their unpleasant feelings	90 (43.5%)	117 (56.5%)	207	**0.43 (ns)**

bs = borderline significance, ns = not significant

Venting coping strategy did not show observable association with either poor or good clinical outcome. However, a chi square test at 95% confidence interval did not show an association between venting coping strategy and good clinical outcome.

Table 5 shows the measure of strength of association of adaptive coping strategies and the level of CD4 cell count of respondents. Adaptive coping strategies were positively and directly associated with good clinical outcome of having above 200 CD4 cell count. Respondents who did not find comfort in their religion were 1.5 times more likely to have less than 200 CD4 cell count than those who found comfort in their religion (OR = 1.5, 95%CI 0.99 – 2.34, p-value 0.055). However, this prediction was not statistically significant. Respondents who did not pray for forgiveness of their sins and healing power of God were twice more likely to have less than 200 CD4 cell count than those who prayed (OR = 2.174, 95%CI 1.31 – 3.60, p-value 0.003). Those who did not perceive HIV as the same as other chronic diseases were twice more likely to have less than 200 CD4 cell count than those who perceived it as the same as other chronic diseases.

Venting coping strategy did not show observable association with either poor or good clinical outcome. However, a chi square test at 95% confidence interval did not show an association between venting coping strategy and good clinical outcome.

Table 5 shows the measure of strength of association of adaptive coping strategies and the level of CD4 cell count of respondents. Adaptive coping strategies were positively and directly associated with good clinical outcome of having above 200 CD4 cell count. Respondents who did not find comfort in their religion were 1.5 times more likely to have less than 200 CD4 cell count than those who found comfort in their religion (OR = 1.5, 95%CI 0.99 – 2.34, p-value 0.055). However, this prediction was not statistically significant. Respondents who did not pray for forgiveness of their sins and healing power of God were twice more likely to have less than 200 CD4 cell count than those who prayed (OR = 2.174, 95%CI 1.31 – 3.60, p-value 0.003). Those who did not perceive HIV as the same as other chronic diseases were twice more likely to have less than 200 CD4 cell count than those who perceived it as the same as other chronic diseases.

Literature shows that adaptive coping strategies influence clinical outcome of PLHA. In order to ascertain this association a cross tabulation of coping strategies and level of CD4 cell count was made. Table 6 shows the association of adjusted coping strategies and their prediction of clinical outcome. When these coping strategies were adjusted positive reframing and religion coping strategies were still a strong predictor of good clinical outcome. Having controlled other coping strategy variables, respondents who did not perceive HIV as the same as other chronic diseases had a risk of 1.7 times more likely to have less than 200 CD4 cell count than those who perceived it has as the same as other chronic diseases with a significant association (OR = 1.665, 95%CI 1.07 – 2.58, p-value 0.023). Likewise, people who did not pray for forgiveness of their sins and healing power of God were twice likely to have less than 200 CD4 cell count than those who prayed (OR = 1.965, 95%CI = 1.09 – 3.52, p-value 0.023).

Table 6: Adaptive coping strategies and risk of having less than 200 CD4 cell count

Coping strategies	n (%)	B	Adjusted odds ratio	95% CI of odds ratio	P-value
Positive reframing					
Did not perceive HIV as the same as other chronic diseases	145 (37.2)	0.510	1.665	1.07 – 2.58	**0.023**
Perceived HIV as same as other chronic diseases	245 (62.8)	1	1	1	1
Humor					
Did not make fun of HIV problems	253 (64.9)	0.063	1.065	0.58 – 1.94	0.84 (ns)
Made fun of HIV problems	137 (35.1)	1	1	1	1
Did not make jokes about the HIV disease	262 (67.2)	0.454	1.575	0.85 – 2.92	0.15 (ns)
Made jokes about HIV disease	128 (32.8)	1	1	1	1
Religion					
Did not pray for healing power of God	77 (19.7)	0.675	1.965	1.09 – 3.52	**0.023**
Prayed for the healing power of God	313 (80.3)	1	1	1	1
Did not find comfort in religion	125 (32.1)	0.080	1.083	0.66 – 1.78	0.75 (ns)
Found comfort in religion	265 (67.9)	1	1	1	1

ns = not significant

In order to explore the association between maladaptive coping strategies and clinical outcome, a cross tabulation of these variables was conducted. Table 7 shows the association of maladaptive coping strategies and current level of CD4 cell count. Respondents with maladaptive coping strategies were having poor clinical outcome manifesting through having less than 200 CD4 cell counts as compared to those who did not use them.

Table 7: Association of maladaptive coping strategies and current level of CD4 cell count

	Current CD4 count (cells/mm^3)			
Maladaptive coping strategies	**0 – 200**	**Above 200**	**Total**	**p-value**
Denial				
said that HIV has happened to them	47 (33.1%)	95 (66.9%)	142	
Said that HIV has not happened to them	113 (46.3%)	131 (53.7%)	244	**0.011**
Behavioural disengagement				
Did not give up to attempt to look for alternative ways of living with hope with HIV and AIDS	141 (40.1%)	211 (59.9%)	352	
Gave up to attempt to look for alternative ways of living with hope with HIV and AIDS	18 (58.1%)	13 (41.9%)	31	**0.051(bs)**
Substance use				
Did not use alcohol or other drugs to make them feel better from HIV related stress	134 (40.9%)	194 (59.1%)	328	
Used alcohol or other drugs to make them feel better from HIV related stress	26 (45.6%)	31 (54.4%)	57	**0.50 (ns)**
Self blame				
Did not blame themselves for contracting HIV infection	40 (35.7%)	72 (64.3%)	112	
Blamed themselves for contracting HIV infection	123 (44.2%)	155 (55.8%)	278	**0.12 (ns)**

bs = borderline significant, ns = not significant

A large proportion of respondents (66.9%) who did not use denial coping strategy and accepted that HIV had happened to them had better CD4 cell count than those who used to deny their HIV status (53.7%). A chi square test with p-value of 0.011 estimated at 95% confidence interval proved that these findings were statistically significant.

Respondents who used behavioral disengagement coping strategy had poor clinical outcome. High proportion of respondents (58.1%) who gave up seeking for alternative ways of living with hope with HIV and AIDS had less than 200 CD4 cell count. Likewise, a big proportion of respondents who did not give up (59.9%) had good clinical outcome with CD4 cell count above 200. However, this finding was not statistically significant when tested with chi square at 95% confidence interval.

Respondents who did not use alcohol or other drugs to make them feel better from HIV related stress had CD4 cell count above 200 (59.1%) than those who used alcohol or other drugs (54.4%). This finding was not statistically significant when tested with chi square test at 95% confidence interval. Similar results were observed among respondents who used self blame coping strategies. Respondents who did not blame themselves for contracting HIV infection constituted a higher proportion (64.3%) of individuals who had CD4 cell count of more than 200 compared to their counterparts (55.8%). However, these findings were not statistically significant with chi square test at 95% confidence interval with p-value of 0.12.

In order to explore the risk of maladaptive coping strategies resulting into poor clinical outcome, the logistic regression between the variables was conducted. Table 8 displays the results of maladaptive coping strategies and risk of having less than 200 CD4 cell count. The results shows that having controlled the effect of other maladaptive coping strategies variables, respondents who said that did not have HIV (denied it) had a risk of 0.5 times more likely to have less than 200 CD4 cell count than those who accept their HIV status (OR = O.547, 95%CI = 0.35 – 0.85, p = 0.007). The relationship is inverse as shown by negative regression coefficient β = - 0.604. Thus, the greater the denial the more the prediction of CD4 cell count of less than 200.

Table 8: Maladaptive coping strategies and risk of having poor clinical outcome

Coping strategies	N (%)	β	Adjusted odds ratio	95% CI of odds ratio	P-value
Denial					
Said that HIV has not happened to them (denied)	244 (63.2)	-0.604	0.547	0.35 – 0.85	0.007
Said that HIV has happened to them (accepted it)	142 (36.8)	1	1	1	1
Behavioural disengagement					
Gave up to attempt to look for alternative ways of living with hope with HIV and AIDS	352 (91.9)	-0.819	0.441	0.21 – 0.94	0.034
Did not give up to attempt to look for alternative ways of living with hope with HIV and AIDS	31 (8.1)	1	1	1	1

Holding the denial variable constant, behavioral disengagement has a risk of 0.4 more likely to entail less than 200 CD4 cell count than those who defer to use it (OR = 0.441, 95% CI = 0.21 – 0.94). The correlation of current CD4 cell counts with behavioral disengagement is -0.819 implying to have inverse relationship, that the more an individual uses behavioral disengagement coping strategy, assumes the less than 200 CD4 cell count prediction.

5.1 Coping strategies adopted by PLHA on HAART in the study area

This study captured different coping strategies employed by PLHA in order to control unpleasant situation due to their HIV infection status. Majority of respondents used adaptive coping strategies like seeking religious support, humor, positive reframing and seeking effective social support. Very few respondents used maladaptive coping strategies such as denial, venting, substance use and behavioural disengagement. It would be observed that PLHA in Tanzania are not different from those in other parts of the globe with regard to coping strategies. What remains unclear, however, is how this understanding can help us predict the good or poor clinical outcome of a client recently enrolled on HAART.

Curricula for training hospital based Counselors and supervisors include care, coping and social support counseling (NACP, 1999). This study identifies the particular coping strategies that can be emphasized during the training.

5.2 Influence of coping strategies on clinical outcome of HAART

This study used current level of CD4 cell count to predict the clinical outcome. Studies conducted by Zhou, et al. (2005) and Erikstrup, et al. (2007) showed that CD4 cell count, rather than viral road, was the most important predictor of short term risk of HIV disease progression. Data from this study show that majority of the respondents who employed adaptive coping strategies like positive reframing, humor and finding comfort in religion had good clinical outcome. However small number respondents who used maladaptive

coping strategies like denial, behavioral disengagement, substance use and self blame had poor clinical outcome with CD4 cell count less than 200. This finding is important particularly in the rural areas (of developing countries) where CD4 cell count and viral road tests are difficult to access for the follow up of clinical assessment of PLHA on HAART. Hence, clinicians can use patients' psychosocial factor analysis to predict the HIV progression and determine their adherence to HAART with subsequent of the disease prognosis.

Gender was observed to influence the level of current CD4 cell count of respondents. Being a male has a risk of 0.56 times more likely to have less than 200 CD4 cell count as compared to female. This finding is similar to other published work of (Erikstrup, et al., 2007). Respondents with higher monthly average income had relatively higher CD4 cell count. This finding is very important when considering the social economic status context of PLHA in sub-Saharan Africa where the majority live under the poverty line. Getting basic needs of life like food and shelter, let alone affording balanced diet needed for PLHA, is a big issue. However, It is observed in this study that more women have better CD4 cell count than men despite of being poorer than men. This can be explained basing on the behavioral clinical attendance of men and women at CTCs. It is more women who come for the treatment at CTCs than men. It is presumed that men have a tendency of hiding themselves from the treatment because of fear attributed to social stigma. Men are relatively busy and outgoing to search for daily bread for the family. In doing so they could having poor HAART adherence as compared to women. It suggests

that apart from enabling PLHA to access HAART, there is need to support them financially their economic activities in groups or individually so that they can meet HIV and AIDS related costs.

Seeking religious comfort appeared to be a strong coping strategy among PLHA studied. Respondents who did not pray for healing power of Almighty God had 2.2 times greater risk of having less 200 CD4 cell count than those who prayed. This result is similar to that of Cotton, et al (2006), McCain, et al., (2006) and Inez & Wantana, (2007) conducted in U.S.A. concluded that greater level of spirituality was associated with better health outcome. It suggests that spiritual leaders should be encouraged to counsel their belivers who are either HIV positive or AIDS patients and their relatives lather than blaming them as sinner.

Respondents who adopted maladaptive coping strategies had a greater risk of having less than 200 CD4 cell counts than those adopted adaptive coping strategies. This result corresponds to other published work conducted in different populations (Ashton, et al., 2005). Denial (avoidant) coping strategy is significantly associated with poor clinical outcome. It is found from this study that denial coping has a risk of 0.55 times more likely decrease the level of CD4 cell count. Similar findings were reported from a study conducted by Ironson, et al. (2005); Ironson, et al, (2005) and Leserman et al. (1992). It suggests that HIV positive and AIDS patients should be encouraged to promote risk reducing behavior for better clinical outcome.

Ashton, et al., (2005) and Robert, et al. (2007) reported that respondents who used alcoholic beverages had poor coping strategies, which was also linked with poor adherence to HAART. In this study respondents who used alcohol were having poor clinical outcome as compared to their counterparts. However, this finding is considered not reliable because the majority of PLHA had gone through counseling restricting them from alcohol use while on the HAART. Similarly, conducting interviews within the CTC premises could have influenced responses provided.

CHAPTER SIX

6.0 CONCLUSION AND RECOMMENDATIONS

6.1 CONCLUSION

The study documented several positive coping strategies that have good impact on the patients' clinical outcome. The maladaptive coping strategies result into poor clinical outcome. Generally, it is concluded that majority of respondents were adopting adaptive coping strategies which make them to have good clinical outcome. Positive reframing, humor and religion coping strategies appeared to have strong influence resulting onto good clinical outcome. However, denial, behavioral disengagement and self blame coping strategies were associated with poor clinical outcome.

6.2 RECOMMENDATIONS

From the findings the following are recommended to the MoHSW/NACP:

- There is a need to prioritize a component on psychological factors in the training of HIV counselors and emphasize beneficial coping strategies supported by this study so as to limit patients' poor clinical outcome while on HAART.

- There are is a need to involve religious leaders in addressing spiritual concerns that are equally important in the care and treatment of HIV and AIDS in Tanzania.

- Clinicians will need training intervention on how to identify a client with poor prognostic behavioral presentations so that early modeling of behaviour can be instituted say by use of health beliefs model and prevention further morbidity, mortality and HAART drug resistance.

- Government intervention to provide national access to HAART has resulted into tremendous reduction of morbidity and mortality among PLHA. However majority of PLHA live under extreme poverty line (spending less than a dollar per day per person). Basic needs like food and shelter are still life stressing factors more especially in PLHA. Provision of food subsidy services at CTCs will extremely reduce some basic need stress and promote good health and adherence to prescribed regimen to those who claim that they get drug side effects because they lack to take enough food. This service will reduce more spread of HIV infection which is being promoted by individuals who are involved themselves in promiscuous behaviour while are looking for basic need.

- Finally, further research is recommended to explore the influence of coping strategies on good clinical outcome and adherence to HAART among PLHA in Tanzania.

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