

Adherence to Antiretroviral Therapy and Associated Factors
among Patients Living with HIV/AIDS at Dil Chora Referral
Hospital in Dire Dawa, Eastern Ethiopia

MSW Dissertation Research Project
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DECLARATION

I hereby declare that the dissertation entitled Adherence to Antiretroviral Therapy and Associated Factors among Patients Living with HIV/AIDS at Dil Chora Referral Hospital in Dire Dawa, Eastern Ethiopia submitted by me for the partial fulfillment of Masters of Social Work (MSW) to Indira Gandhi National Open University (IGNOU), Addis Ababa is my own original work and has not been submitted earlier, either to IGNOU or to any other institution for the fulfillment of the requirements for any other programme of study. I also declare that no chapter of this manuscript in whole or in part is lifted and incorporated in this report from any earlier work done by me or others.

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DEDICATION

I dedicate the MSW Dissertation to my beloved wife Mrs. Eden Meberhatom for her tireless support and encouragement during proposal and report writing.

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Abbreviations and Acronyms

AIDS	Acquired Immunodeficiency Syndrome
ART	Antiretroviral Therapy
ARV	Anti-Retro Viral
DAART	Directly Administered AntiRetroviral Therapy
DDRHB	Dire Dawa Regional Health Bureau
DRH	Dil Chora Referral Hospital
DOT	Directly Observed Therapy
EHNRI	Ethiopian Health Nutrition and Research Institute
FMOH	Federal Ministry of Health
FGD	Focus group discussion
HAART	Highly Active Anti-Retroviral Therapy
HIV	Human Immunodeficiency Virus
MSH	Management Science for Health
PLWHIV	People Living With HIV
RPM	Rational Pharmaceutical Management
UNAIDS	United Nations Program on HIV/AIDS
UN	United Nations
WHO	World Health Organization

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Abstract

Antiretroviral therapy has transformed the HIV infection into a chronic manageable disease. Optimal adherence (95%) is required to achieving treatment success; however, still non adherence remains major problem among patients receiving antiretroviral therapy (ART). The aim of this study was to determine adherence rate and evaluate factors affecting adherence among patients on ART in Dilchora Referral Hospital. A mix of quantitative & qualitative method was used. For quantitative method a total of 97 people living with HIV/AIDS on ART were included in the cross sectional survey. All patients who came to the hospital during study period were considered based on convenient sampling technique. One test is used to examine the association of adherence with associated factors. Both data entry and analysis was done using SPSS version 20. For the qualitative study FGD was conducted with 25 ARV users, and 18 peer educators. And key informant interview with two health workers. The qualitative data was transcribed & categorized by main theme manually & presented in narrative form to supplement the quantitative findings. Of 97 respondents, 60 (61.9%) were females and 37 (38.1%) were males. 87 (89.7%) had 100% adherence, 6 (6.2%) had 95-100% and the rest, 4 (4.1%) had <95% adherence with overall adherence rate of 95.9% for last month prior to the study period. The main reasons for skipping the doses were 4 (4.1%) forgetfulness, 3 (3%) being away from home. Other reasons included sleeping and being busy with other things. Living with others ($P=0.001$), being married ($P=0.000$), family disclosure ($P=0.002$) and using money aids ($P=0.000$) were significantly associated with adherence to ART. The self-reported adherence rate to ART (95.9%) was found to be relatively higher which needs inclusion of other methods to ensure consistency of this value. Forgetfulness, being away from home and being busy with other things were the foremost reasons for non-adherence. The patients should be encouraged to maintain this high level of adherence.

Keywords: Adherence, Antiretroviral therapy, HIV/AIDS, Dilchora Referral Hospital

Chapter 1

Introduction

1.1. Background of the problem

Globally, there were 34.0 million people living with HIV at the end of 2011, the majority of them reside in sub-Saharan Africa. This is, with nearly 1 in every 20 adults (4.9%) living with HIV and accounting for 69% of the people living HIV worldwide (UNAIDS, 2012).

Ethiopia is among the countries most affected by HIV and AIDS. There were an estimated 789,960 people living with HIV. According to the single point HIV prevalence estimates, the adult HIV prevalence in 2011 was 1.5 % which put the prevalence among males and females at 1.0 percent and 1.9 percent respectively (EHNRI & FMoH, 2012).

In 2011, 1.7 million people worldwide died from AIDS related causes, down 24% from the peak in 2005. The number of people dying from AIDS related causes in sub-Saharan Africa declined by 32% from 2005 to 2011, although the region still accounted for 70% of all the people dying from AIDS in 2011 (UNAIDS, 2012). In Ethiopia, there were 53,831 people who died from AIDS related death with an estimated 24,236 new HIV infections annually in 2011 (EHNRI, 2012).

Regarding the prevalence of HIV in Dire Dawa Administration, the estimated adult prevalence of the Region for the 2012 EHNRI report was 4%; 5.0% in females, 2.6% in rural and 0.9% in rural and 2.6% in urban, which translates to 281 new HIV infections on the top of over 9,923 people living with HIV in 2011 (EHNRI, 2012).

HIV/AIDS has been fueling child morbidity and mortality and many children have been orphaned by it in Africa than anywhere else (Beith, 2006). The tragic impact of HIV/AIDS in Ethiopia is still adversely affecting developments. Productivity costs and increased health care burdens to manage the disease have significant economic implications to the country (Abuhle, 2007).

The fact that HIV/AIDS is a disease of no cure; its impacts are multifaceted and disrupted the life of victims, their children and family as whole. Later, entry of HAART in the continuum of

medical care has brought hope and tangible health outcomes. Despite the introduction of HAART has helped to reduce the incidences of opportunistic infections and improves survival and quality of life, patients are experiencing difficulty in adhering to the treatment as this long term therapy which may be complex in terms of pill burden, dosing, specific dietary restriction (Ikuma, 2011).

HAART has thus improved the quality and quantity of the lives of many of the People Living with HIV/ AIDS (PLHIV) since its introduction. However, nearly a perfect adherence is crucial in order to attain the ART success. But, adherence is a complex feature influenced by numerous factors. Studies revealed that the initial optimism regarding the efficacy of HAART has currently dissipated and there are fears that sub optimal adherences, allowing ongoing viral replication, facilitate the emergences of HIV resistant variant and cutback the treatment options for the individual patients. Non-adherence has also implication for the broader public health since it might increase the risk of HIV transmission of resistant strains, which ultimately put patients out of alternatives to manage their disease (HAPCO, 2007; Mills, 2006; UN, 2010).

There have never been standard tools for measuring adherences with absolute precision and truthfulness in outpatient clinical settings. And the average rate of adherences varies with the method used to measure it. Nevertheless, for most patients there is a common consensus that nearly perfect (95%) adherence is necessary to achieve full and durable viral suppression, thereby full viral suppression allows for maximal reconstitution or maintenances of immune function, minimizes the emergences of drug resistant virus and thereby obtaining the intended therapeutic effect (Machtingn, 2005) Hence, it is imperative to undertake an assessment study on the degree of adherence to ART and to identify factors associated with adherence of HIV positive patients who were on ART at Dil Chora Referral Hospital Dire Dawa, Eastern Ethiopia.

1.2. Statement of the problem

In HIV care and treatment, adherence to ART is highly important. Achieving at least 95% adherence is vital for preventing viral resistance and treatment failure (Mills, (2006). Adherence to Anti-Retroviral Therapy (ART) among people living with HIV/AIDS is multifaceted problems and challenges; such as sociodemographic and economic characteristics of PLHIV,

lack of adequate and quality supplies of necessary input on time in different context and for various clients at different level, etc. The effective and efficient provision of ART service(s) in different context and at different level requires a combination and an integration of antiretroviral medication therapy (Abiola, 2007).

The efficacy of combination of antiretroviral medication therapies (ART) for the treatment of HIV-disease is now well documented. Combination therapies can inhibit viral replication and reduce viral load to a point where viral particles are undetectable in the blood of these individuals. Significant and sustained suppression of HIV replication is associated with improved clinical outcomes. However, these benefits are only tenable when Adherence to precise dosing schedules is rigorous and other treatment requirements are followed. Partial or poor adherence can lead to the resumption of rapid viral replication, poorer survival rates, and the mutation to treatment resistant strains of HIV.

It is believed that poor antiretroviral therapy adherence is strongest predictor of progression to AIDS and death after starting their treatment. Incomplete adherence to ART is, however, common in all groups of treated individuals. According to the 2010 UNAIDS Report, the average rate of adherence to ART was approximately found to be 70%, despite the fact that long term viral suppression requires near perfect adherence. The resulting virology failure diminishes the potential for long term clinical success. Risk of drug resistant strains of HIV is also one of the major treats that may lead to the second line ART which is not cost effective.

Poor adherence of ART could be a major challenge to decrease the outcome of ART program; consequently, it creates a problem in the community at large in terms of socially, economically, etc. Therefore, the identification of these major factors contributing for poor adherence of ART and then for designing effective strategies should be supported by empirical data generated through conducting research using social work concepts, methods and/or techniques.

Socio-demographic and economic characteristics and factors may sometimes come up in the context of ART service provision. The medical and social workers should have been informed so that they could manage these problems and challenges in different context, while working with different clients and at different level.

1.3. Research questions

This study addressed the following research questions:

- What are levels of knowledge and perception of HIV and ARV among the patients at Dil Chora Referral Hospital in Dire Dawa City Administration?
- To what extent, do the patients adhere to the uses of ART?
- What types of strategy are used by the patients in order to adhere to the ART provided at the Dil Chora Referral Hospital in Dire Dawa?
- What are the behavioural and clinical characteristics of the patients at the Hospital?
- Do the behavioural and clinical characteristics of the patients at the Hospital relate to their level of adherence to ART?
- What are the common adverse effects of ART faced by the patients?
- What are the reasons for claimed level of ART adherence by the patients?
- Are there associations between socio-demographic characteristics of the patients and their levels of adherence to ART at the Hospital? And
- What factors are associated with adherence to ART among the patients at Dil Chora Referral Hospital in Dire Dawa City Administration of Eastern Ethiopia?

1.4. Objectives of the study

The study has both general and specific objectives to be achieved and then to address the abovementioned research questions.

1.4.1. General Objective

The study intended to assess the magnitude of adherence to antiretroviral therapy (ART) and associated factors among people living with HIV/AIDS at Dil Chora Referral Hospital in Dire Dawa, Eastern Ethiopia.

1.4.2. Specific Objectives

Specifically, this study aimed:

- o To assess the magnitude of adherence to ART among people living with HIV/AIDS at Dil Chora Referral Hospital Dire Dawa, Eastern Ethiopia;

- o To identify factors associated with adherence among the patients living with HIV/AIDS at DilChora Referral Hospital in Dire Dawa, Eastern Ethiopia;
- o To investigate associations between the behavioural and the clinical characteristics of the patients with their adherence to ART at the Hospital; and
- o To assess knowledge and perception of HIV ARV among the PLHIV who are clients of the ART Unit of Dil Chora Hospital in Dire Dawa.

1.5 Definition of key terms

- Adherence is a person is said to have good adherence if she/he missed no more than one dose, medication return 5% of prescribed dose and nevirapine plasma concentration > 3µg/ml.
- Caretaker is refers to person who lives with the individual and participates in the his/her daily care and take the responsibility in giving the child medication and bring the child to clinic.
- Consecutive sampling is a non-probability sampling technique which include all accessible subject as part of sample, considered as best of all non probability samples because it include all subject that are available.
- HIV-infected people are individuals who are aged more than 18 months with positive test for HIV antibodies using Enzyme immunoassays.
- Antiretroviral drugs are drugs that inhibit replication of HIV.

1.6 Limitations of the study

The nature of the design of this study does not allow for assessment of causal relationships among the variables of interest and thus strong conclusions cannot be drawn. Time and other resource constraints determined the choice of the current design. A prospective cohort study would generate data that could be used to make causal inference. v Caretaker report of adherence is subject to recall bias and this might lead to overestimating adherence. This was minimized by asking for number of doses taken on each day in previous 3day prior interview. The genotyping of the people with respect to metabolizing enzymes CYP 2B6 and CYP 3A was not done to determine the metabolic

capacity of individual children despite that a recent study conducted in Ethiopia population indicates that the frequencies of hypotype expressing increased activity of ~~ethyres~~ are low among Ethiopian populations. Despite these limitations, this study assessed adherence by using drug level which is an objective method. This might give better estimation of proportion of adherence to ARV in HIV infected people and findings may be valid to be generalized to target population.

1.7 Organization of the thesis

The MSW thesis consists of five chapters. The first chapter introduces the background of the problem, problem statement, research questions, objectives of the study, ~~definitio~~ key terms, limitations of the study, and organization of the thesis. Chapter two reviews and presents relevant literature on theories ~~to~~ understand ART adherence, ART adherence measurement tools, factors associated with ART, challenges of ART ~~and~~ issues, an overview of research on ART in the world, the situation of ~~V~~ AIDS, and research on ART in Ethiopia. The next chapter dwells on study design and methods in general, and description of the study area, study design and methods, ~~univ~~ ~~the~~ ~~study~~, sampling method, data collection tools/instruments and procedures, data processing and analysis, and ethical considerations in particular. Chapter four is on data analysis, presentation and discussion. More specifically, it presents and ~~disc~~ ~~usses~~ about socio-demographic and economic characteristics of the respondents, behavioral and clinical characteristics of the patients on ART, their knowledge and perception of HIV and ARV, ART adherence and strategy used, and factors affecting ART ~~adher~~ ~~ence~~ of the patients. Finally, it draws conclusions from major findings of the study and then suggests social work interventions at different levels of the ART Programme in the study area.

Chapter 2

Literature Review

2.1 Introduction

This chapter has eight sections, including the introductory statements. It then describes four theories which help readers to understand the ART adherence, the ART adherence measurement tools used, adherence to ART measurement factors associated with ART adherence, challenges of ART and related issues, an overview of research on ART and related issues, and the situation of HIV/AIDS and research on ART in Ethiopia.

2.2 Theories to understand adherence

Scholars in the field of study argue that there are four major theories which may help us to understand adherence to ART among the patients. These are the Health Belief Model, Theory of Reasoned Action, Theory of Planned Behaviour, and Social Action Theory. According to Eccles et al. (2005), the coherent and noncontradictory set of statements, concepts or ideas, explains phenomena, events, and behaviour. Although theory played an important part in explaining adherence behaviours, existing theory has primarily been developed from individual psychological and behavioural research into social and cognitive theories (Kagee, 2008). These theories include the Health Belief Model, Theory of Reasoned Action, and Theory of Planned Behaviour.

2.2.1 Health Belief Model

The Health Belief Model was proposed by Rosenstock in 1966 (Rosenstock, Strecher, Becker, 1988). The basic components of this model attributes adherence to two variables: (1) the value patients place on a particular goal; and (2) the patient's estimate of the likelihood that an action will contribute to a particular goal (Mainman & Becker, 1974). When these variables are conceptualized within the context of adherence behaviour, the associations are: (1) the desire to achieve good or better health; and (2) the belief that adherence will improve the patient's health. Furthermore, the Health Belief Model also theorizes that patients are more likely to adhere to

treatment under conditions which include: (1) them at least possessing some health knowledge and being motivated to stay healthy; (2) them clearly perceiving HIV as a serious medical and health problem; (3) them being convinced that ARV treatment is effective, meaning that it is possible for them to obtain control over the disease at an acceptable cost and that the costs do not outweigh the benefits; and (4) the presence of an internal or external stimulus referred to as a 'cue to action', which would include barriers that prohibit the patient from adhering to ARV treatment (Ilongo, 2004). Thus, the Health Belief Model proposes that if the patient was presented with the facts and alternatives surrounding ARV treatment, that they would adhere (Kagee, 2008).

2.2.2 Theory of Reasoned Action and Theory of Planned Behaviour

The Theory of Reasoned Action was first introduced by Ajzen and Fishbein (1980). This Theory assumes that the patient's intent to perform a given health behaviour was influenced firstly, by their attitude towards a given action; and was based upon their positive or negative beliefs and evaluation of the outcome of the given action (Munro, 2007). Secondly, the decision to perform given health behaviour was also based upon the subjective norms or perceived expectations of important others and the motivation for the patient to comply with others' wishes. Self-efficacy is a third influencing factor, i.e. the patient's sense of self control and perception of their ability to perform a given health action (Spring, 2008). Thus, the Theory of Reasoned Action assumes that adherence behaviour is under the voluntary control of the patient, and intention to be adherent is the single best indicator of their motivational readiness to act.

The Theory of Reasoned Action was renamed by Ajzen as the Theory of Planned Behaviour adding the concept of perceived behavioural control, opportunities, resources and skills necessary to perform particular health behaviours. This concept of perceived behavioural control is similar to the concept of self-efficacy as proposed by the Theory of Planned Behaviour, which, instead of only focusing on the perception of control over personal capabilities, also includes external circumstances (Munro, 2007).

2.2.3 Social Action Theory

Although the previous theories mainly described adherence in terms of cognitive theory, Ewart's Social Action Theory touches on social context when understanding adherence health behaviour. According to Gore-Felton et al. (2005) this theory proposes that health behaviours result from the interaction between three domains: (1) the self-regulation capabilities of the patient such as the adherence-efficacy and treatment expectations; (2) responses to internal affective states that influence the self-regulation process, such as depression, anxiety and positive affect; and (3) the larger environmental context which include sociodemographic and treatment variables. Thus, this theory ascribes patients' ability to be adherent to ARV treatment to their ability to change behaviours that endanger their health. This ability to change behaviour is influenced by the patient's self-change processes (cognitive capability, information processing, self-efficacy, outcome expectancies, social skills, self-regulation skills, rewards). It is also influenced by contextual factors such as environmental factors and social interactions that encourage or discourage the change process.

In summary, the present chapter has indicated the scale of the HIV and AIDS pandemic on a global as well as a local level. The importance of ART regimens and the importance of precise adherence to ART have also been stressed, since adherence to ART impacted on both individuals and their communities. However, to date adherence behaviour is mainly addressed in the context of individual psychological and behavioural barriers, with very little focus on the barriers present within the patient's environment. In the next chapter is on presentation data analysis, interpretation and discussion, including informed consent procedures, data analysis and ethical approval.

2.3 ART measurements tools

Given the lack of a gold standard for measuring adherence (Kent et al., 2006) the pros and cons of different kinds of adherence measures, the Tanzania and Botswana teams selected three measurement tools for undertaking study on adherence to ART: (i) two day self report recall (ii) one month visual analogue and (iii) pharmacy pill counts. The two day self report and one month visual analogue recall methods have been found by Oyugi and colleagues to be valid instruments for estimating adherence in a recent study in Uganda (Hardon et al., 2006).

The visual analogue method used in Botswana and Tanzania differed. In Botswana, ARV users were asked to indicate their adherence rate over the past month using a 10 centimetre long „visual analogue„ line. The beginning of the line indicated not taking the medications at all in the past month, while the end meant taking all of them as prescribed. The patient's mark was then measured using a 10 cm ruler and translated into percentages. The Tanzanian team used a glass full of beads representing the total number of pills that the patient should have taken over the previous month. The researcher then asked ARV clients to pour the beads from one glass into another in order to estimate the number and percentage of pills that had not been taken over the past month. The researchers used a centimetre measure to calculate the proportion of beads not consumed. To calculate this, they divided the height of the remaining beads in the glass by the original height of the beads (representing the total number of pills to be taken over one month).

Each of these three measures has strengths and limitations. In order to reduce desirability bias, the trained researchers who conducted the day-recalls and the one-month visual analogue methods were encouraged to be sympathetic to the problems experienced by respondents. The day-recall has the advantage of a short time span, which means that memory of medicine intake is likely to be good; however, patients may feel ashamed to report specific instances of non-adherence that occurred in the 48 hours prior to visiting the health facility, especially if they have to specify on the chart exactly when they failed to take a pill and then to explain. In terms of desirability bias, the one-month visual analogue methods are likely to be better. By estimating the number of pills missed over a one-month period, patients are confronted less with each specific non-adherent event. The pill-count can be defined as the most objective of the three approaches, measuring the actual number of pills left over since the previous refill. However, patients who fear the possible repercussions of revealing to the dispensing pharmacist that they have not achieved good adherence, may present fewer pills to the pharmacist than were actually left over. All three methods are likely to overestimate adherence.

The key to measuring adherence accurately is to ensure that respondents do not feel threatened when reporting in one way or another a non-adherent event. Rather than measuring exact levels of adherence, these measures should be seen as producing „good enough,, estimates of adherence. Given that the optimum level of adherence is at least 95%, the aim of adherence measures should be to determine to what extent such near-complete adherence is actually being achieved. Since lapses in adherence can lead to treatment failure and the emergence of drug-resistant HIV, poor adherence is not only a problem to users but to public health in general. For individual patients, the adherence tools can perhaps best be used as points of reference in counselling sessions on adherence, in order to discuss the reasons for poor adherence and ways to overcome these constraining factors

2.4 Adherence to ART measurement tools

The term „compliance,, more than ten years ago, was used almost interchangeably with the term „adherence,, (Chesney, Morin & Shorr, 2000). This occurred because both terms describe the same behaviour yet implied a different motivation for it. Compliance typically refers to the extent to which a patient obeys the advice and directive of a doctor, and implies a somewhat passive role on the part of the patient, and an overly authoritative role for the doctor (Rackin et al., 2002).

Given the lack of a gold standard for measuring adherence (Kent et al., 2003), and the pros and cons of different kinds of adherence measures, researchers have selected three measurement tools for this study: (i) two-day self-report recall (ii) one-month visual analogue and (iii) pharmacy pill counts. The two-day self-report and one-month visual analogue recall methods have been found by Oyugi and colleagues (2004) to be valid instruments for estimating adherence in a recent study in Uganda.

ARV users were asked to indicate their adherence rate over the past month using a 10-centimetre long visual analogue line. The beginning of the line indicated not taking the medications at all in the past month, while the end meant taking all of them as

prescribed. The patient's mark was then measured using a 10 cm ruler and translated into percentages. The Tanzanian team used a glass of beads representing the total number of pills that the patient should have taken over the previous month. The researcher then asked ARV clients to pour the beads from one glass into another in order to estimate the number and percentage of pills they had not taken over the past month. The researchers used a centimetre measure to calculate the proportion of beads not „consumed“. To calculate this, they divided the height of the remaining beads in the glass by the original height of the beads (representing the total number of pills taken over one month) (Hardon et al., 2006). Additionally, compliance is viewed as valid and containing a directional bias that assumes that physician guidelines are accurate and that patient behaviour should be measured in accordance with these guidelines. Adherence, on the other hand, is less valid and suggests a more comprehensive study of variables that affect adherence (e.g. context). Adherence is therefore defined as the extent to which patients follow the instructions they are given for prescribed treatments (Bosworth, 2005).

Medication adherence is a complex term referring to a variety of distinct adherence, beginning with picking up a prescription and ending with consumption of medication according to the aforementioned author. In the case of adherence to ART, full adherence requires keeping appointments with health care providers, refilling a prescription, correctly counting the medications to be taken, and ensuring that medications are taken at the right time of day and in accordance with dietary guidelines. Therefore, ART adherence is made up of different types of adherence (such as measure of dose adherence, schedule adherence, adherence with dietary guidelines, and adherence to keeping appointments with providers. This may lead to confusion surrounding what is actually being measured in adherence studies.

There are two measures that are frequently used to report adherence to ART. The first is the overall adherence, recorded as the number of tablets taken correctly as a proportion of those which were prescribed. The second measure is the percentage of patients taking 95% of their tablets correctly. While the first measure is important for the clinical evaluation of individual patients and counselling purposes, the second one is essential for programmatic or public health planning and evaluation, as it is one of the most important requirements for the

success of ART Programmes (Laing, 2006). Although adherence is best measured by direct observation, the same author argues that this is not practical for daily ART which has to be taken for the whole of a patient's life. As a result, levels of adherence can only be estimated by use of indirect measures.

Most of the studies on ART adherence have been conducted in North America, Europe and African countries, but not many have been conducted in Asia. There are considerable variations of ART adherence levels between countries and within a country. A meta-analysis conducted by Mills et al. (2006) for 31 studies on a total of 17,573 patients conducted in North America estimated a pooled adherence level of 55%.

2.5 Factors associated with ART adherence

Researchers have already identified numerous factors influencing ART treatment adherence, including the medication adherence of PLHIV. There are different ways to group the factors that influence adherence to ART which range from conceptual frameworks that simply distinguish between individual and contextual factors, to those frameworks that define more detailed categories according to Hoa Mai Do (2011). The contextual factors further include; treatment related issues, family and social support; whereas the individual factors are sociographic factors of the patients, including health focus of control, risk behaviours, mental health, and health services for PLHIV.

2.6 Challenges of ART and related issues

All ARVs have different side effects and these can have an impact both on the medicines will be used and how patients take them. People on ARV medicines frequently report severe and disabling physical symptoms. The most common side effects are nausea, vomiting, fatigue, diarrhoea, and more chronic problems such as peripheral neuropathy, oral numbness, and metallic taste (WHO, 2002). In addition, ARV medications must be taken in accordance with strict dietary guidelines and therefore, can greatly interfere with lifestyle and secrecy concerning HIV status.

Drug resistance is a well-recognized biological phenomenon occurring with infectious organisms, including bacteria, viruses and parasites. Thus, the patients who often experience suboptimal drug levels have an increased chance of drug resistance and failure of therapy (Laing & Hodgkin, 2006). Every effort should be made to ensure a high level of adherence (at least 95%) to the first-line ARVs in order to delay the emergence of drug resistance and enable individuals to be treated for many years with first ARVs (WHO, 2007). Moreover, it is generally evidenced that adherence to ARV medication is critical in order to gain optimal viral suppression and to increase the CD4 lymphocyte count (Murphy et al), 2004

2.7 Research on ART in the world: an overview

A number of studies were undertaken in different part of the world. Most of those studies were conducted in America, Europe, Asia, and African countries, including Ethiopia. Based on the systematic review of literature on the issues under discussion, Hoa Mai Do (2011) argues that, it is clear that there was a gap in studies on ART adherence and its factors between rich resource and poor resource countries. However, there are generally association between individual patients' behavioural and clinical characteristics and adherence to ART in some of those study sites.

2.8 The situation of HIV/AIDS and research on ART in Ethiopia

Ethiopia, as in many other resource poor counties, HIV infected people have been benefiting from the use of ART. A policy on the supply and use of antiretroviral drug is developed and has been approved by the government. There is no consensus on how to measure adherence to antiretroviral and little is understood about the determinants of adherence to antiretroviral. Investigator and clinician continue to be interested in predicting, measuring and improving adherence to a highly active antiretroviral therapy. Many definitions of adherence were used without clear agreement, as evidenced by definitions based up on number of dose missed in specified time period, an appointment missed, self report, care giver report, pill count, electronic monitoring devices and pharmacy refill records.

Regarding the situations of ARV therapy in Ethiopia, the studies conducted in different contexts of Ethiopian major towns and/or cities by public health professionals revealed various levels of adherence to ART. Asegi (2005) shows that adherence to antiretroviral therapy in currently changed treatment guideline on people living with HIV/AIDS at Bishofitu Hospital in East Shoa was found to be 61.0%. Nevertheless, antiretroviral treatment adherence and its correlates among people living with HIV/AIDS on highly active antiretroviral therapy was 81.2% in Addis Ababa, Ethiopia (Yonas, 2005). Ayalew Mengesha (2011) indicates that an assessment of adherence to antiretroviral therapy among HIV-infected persons in the Ministry of National Defence Force Hospitals, Addis Ababa and Debre Ziet.

Chapter 3

Research Design and Methods

This study employed both quantitative and qualitative research methods. The quantitative research method, particularly descriptive cross sectional sample survey, was used to assess the magnitude and associated factors of adherence to ART among people living with HIV/AIDS in Dil Chora Referral Hospital, Dire Dawa, Eastern Ethiopia in order to triangulate the findings of the quantitative aspect of the study, qualitative research methods were also used.

3.1 Description of the Study area

Dire Dawa Administrative region is located to the eastern part of Ethiopia 505 km far from the capital city. It has a land area of 1,288.02 km² with mean altitude of 1000 m.a.s. It is bordered by Oromiya region in the north, North West and Somali region in south and south west. It has 9 urban kebeles and 33 rural kebeles. The annual average rainfall is 676 mm. The total population of the region in 2015 is 440,000. According to the 2008 new census 67.9% were living in urban area. The overall sex ratio is 102.2 males per 100 females. Oromo, Amahara and Somali are the most dominant ethnic group that lives in the region (CSA, 2013).

The potential health service coverage of the region is 100%. There are 4 hospitals (1 Governmental and 3 private), 12 health centers and 31 health posts.

Fig 3.1 Map of Dire Dawa City Administration

SOURCE: CSA, 2013

3.2 Study design and methods

The researcher employed non-experimental research design which involves a mixed research methods. The mixed method would use both quantitative and qualitative research methods. Quantitatively, the researcher used descriptive cross sectional sample survey in order to accurately pieces of information on the magnitude of adherence to ART and factors affecting the patients' adherence to the treatment at Dil Chora Referral Hospital, Dire Dawa, Eastern Ethiopia. In order to generate qualitative data and complement the quantitative data in the study, the researcher employed semi-structured interviews with key informants, focus group discussions with a group of 12 persons, and documentary analysis using interview guide/protocol, FGD schedule/checklist and documentary analysis template/respectively.

3.3 Universe of Study

The universe of the study is composed of all PLWHIV who were on ART. There were about 4391 clients on ART (male & female) in Dire Dawa Town. Among those clients, about 2244 (which is >50%) are following up their ART services at Dil Chora Hospital. Therefore, those clients who were taking their treatment at the Hospital were considered as the study population in the study.

3.4 Sampling Method

All PLWHA taking ART in Dil Chora hospital constituted source population whereas all PLWHA getting antiretroviral treatment services within the study period represented study population. The study covered all consecutive patients who attended ART pharmacy for refill over two weeks study period and hence, convenience sampling technique was used. As to the inclusion and exclusion criteria, study participants that were aged 15 and above years, willing to give informed consent and those that were on ART for more than 3 months were included in this study. For the qualitative study peer educators were contacted to recruit 25 volunteer ARV user & all volunteer peer educators to participate in the study. And also two health workers were included in the qualitative study.

3.5 Data Collection tools and procedures

In the study, both structured questionnaire (interview schedule) and checklist were used as survey instruments (questionnaires) were developed by the researcher and administered to achieve the objective of the study. In addition, the checklist that consisted of list of questions or items for conducting documentary analysis of relevant documents from different sources was used. Moreover 3 types of guiding question were prepared for the first key informant interview. All these research instruments were tested. After that the questionnaire guide was standardized and finalized for the survey purpose. The structured questionnaire contains close-ended questions. However, there were some mixed and open-ended questions. Moreover, ART records of those study units were critically reviewed to identify the clients' adherence status and their status was labeled as poor adherent and good adherent clients based on the national criteria for treatment adherence. Therefore, the questionnaires were administered for the study units regardless of their adherence status.

A cross-sectional study was conducted to collect data for assessment of adherence and associated factors. The adherence rate for the past one month (February, 2015) prior to the data collection period was calculated by considering number of doses taken divided by the number of doses prescribed multiplied by 100%. Eventually, aggregate mean adherence was calculated for the entire period. One drug is regarded as one dose and then adherence to regimen was approximated by the proportion of doses taken in a given period according to the following formula.

Where,

P = No of doses prescribed;

M= No of doses missed and

A= Rate of adherences

In the study, there are both independent variable and dependent variable. The dependent variable is adherence level but the independent variables include: gender, age, address, religion, living condition, marital status, educational level, monthly income, family disclosure, behavioural and clinical characteristics of patients, but to mention just a few. Generally, the study period was from March to October 2015.

3.6 Data processing and analysis

For the survey the completed interview schedule or questionnaire were scrutinized, verified, edited and arranged serially. For coding choices in the instrument, master sheet was prepared accordingly. Then, based on this coding, code book was prepared and entered and processed on computer using the latest version of SPSS. During the data analysis, different statistical techniques were applied using frequency distribution consisting of frequency a percentage, measure of central tendency (mean, mode and median)-square test also done to look for association. Moreover the qualitative data was transcribed & categorized by main theme manually & presented in narrative form to supplement the quantitative findings

3.7 Ethical considerations

At all levels, officials were contacted and permission was secured using letter from St. Mary Distance Education Research Program. The necessary explanation regarding the purpose of the study and its procedure, assurance of confidentiality, the right to participate or not to participate in the study was done to the study participants. Participants were assured about confidentiality of the information obtained in the course of the study in that: no personal identifiers were used and data will be analyzed in aggregates.

Chapter 4

Data Analysis, Interpretation and Discussion

4.1 Introduction

This chapter presents data analysis, interpretation and discussion of the study. First, it describes socio-economic characteristics of the responding patients at the Hospital. Next, it identifies and explains their behavioural characteristics and clinical characteristics of the patients under investigation. The chapter further describes about the patients' knowledge and perception of HIV and ARV, identifies those factors affecting their adherence to ART, and then these empirical findings are discussed to draw conclusions and then recommendation for social work interventions at different levels of the City Administration.

4.2 Findings of the study

4.2.1 Socio-demographic and economic characteristics

A total of 97 PLWHA were involved in this study. Of these 60 (61.9%) were females and 37 (38.1%) were males. More than fifty percent of the respondents 54 (55.6%) in the age group of 24 years followed by 31 (32%) 45 years or above, and only 10 (10.3%) were in the age group of 14 years old. As to the religion majority of the respondents 70 (72.2%) were Orthodox followed by Muslim 15 (15.5%) and Protestant (11.3%) and only 1 (1%) were Catholic. Educationally more than three quarters of the participants, 75 (77.3%) responds that they can write and read and 22 (22.75%) cannot read and write. Regarding the educational level of the 75 participants, 37 (38.7%) were in the range of 7th, 29 (28.89%) grade 8, 9 (9.27%) were 12th completed and above. With regards to the monthly income, 13 (13.4%) have a monthly income of less than 250 birr, 11 (11.3%) 250 birr, 26 (26.8%) 500-1000 and 48 (48.5%) have a monthly income of greater than ETB 1000 (Table 4.1).

Table 4.1: Distribution of socio-demographic characteristics of HIV positive patients in DilChora Referral Hospital Dire Dawa, Eastern Ethiopia, March 2015

variables	Category	Number	N (%)
Gender	Male	37	38.1%
	Female	60	61.9%
Age in year	15-24	10	10.3%
	25-44	56	57.7%
		31	31.9%
Address	Urban	96	99.0%
	Rural	1	1.9%
Religion	Orthodox	70	72.2%
	Muslim	15	15.5%
	Protestant	11	11.3%
	Other	1	1.0%
Living condition	Living with other	44	45.4%
	Living alone	53	54.6%
Marital status	Single	14	14.4%
	Married	44	45.4%
	Divorced	16	16.5%
	Widow	23	23.7%
Educational level	Illiterate	23	23.7%
	1-6	28	28.9%
	7-11	37	38.1%
	12 and above	9	9.3%
Monthly income	< 250	13	13.4%
	250-500	11	11.3%
	500-1000	26	26.8%
	>1000	47	48.5%
Family disclosure	Yes	75	77.3%
	No	22	22.7%

SOURCE: Own survey of March 2015

4.2.2 Behavioural characteristics of the patients

Eighty seven (89.6%) of the study subjects used reminders, mobile alarm being the majority (49.4%) of the reminders to be used. Near to 83 (85.6%) of the respondents were not active substance abusers (i.e. Khat chewers, cigarette smokers and alcohol drinkers) (Table 2)

Table 4.2: Behavioral characteristics of adult ART users in DilChora Referral Hospital, Eastern Ethiopia, March 2015

Variables			
		No	%
Remainder used	Yes	87	89.6
	No	10	10.4
Types of remainder	Mobile bell	43	49.4
	Alarm watch	18	20.7
	Radio	5	5.7
	Television	5	5.7
	Used more than one ai	6	6.9
	Nothing	10	11.6
	Active substance user	Yes	14
	No	83	85.6

SOURCE: Own survey in 2015

4.2.3 Clinical characteristics of the patients

Of the study participants only 17 (17.5%) were not involved in decision making to initiate ART while the majority 80 (82.5%) were involved in decision making to initiate ART. With regards to the functional status, majority 95 (97.9%) were working and only 2 (2.1%) were ambulatory. As to the treatment duration, majority 80 (82.5%) of the participants were more than 24 months on ART, followed by 13 (13.4%) between 12-24 months, 3 (3.1%) -72 months and only 1 participant was less than 6 months on ART.

With regards to the type of ARV regimen 36 (37.1%) were on 1e (TDF/3TC/EFV), followed by 33 (34.0%) 1f (TDF/3TC/NVP), 17 (17.5%) were on 1c (AZT/3TC/NVP) and the rest 11 (11.3%) were on 1d (AZT/3TC/EFV).

Fig 4.1: Distribution of HIV positive patients by ARV regimen in DilChora Referral Hospital, Eastern Ethiopia, March 2015

SOURCE: Own survey data analysis output 2015

Regarding the WHO clinical stage majority of the participants 55 (56.7%) were on Treatment stage 1 (T1) and only 1 participant are in Stage 1.

Fig 4.2: Distribution of study subjects by WHO clinical staging in Dilchora Referral Hospital, Eastern Ethiopia, March 2015

SOURCE: Own survey results of 2015

About threequarter of patients responded that they did not encounter any adverse effects of ARV drugs in the previous one month prior to data collection date ~~where~~ (28.9%) of them reported as they experienced adverse effects. The common adverse effects were nausea and vomiting 11 (11.3%), headache 7 (7.2%) and skin rash 3 (3.1%) (Table3).

Table 4.3: The common adverse effects faced by HIV positive patients in DilChora Referral Hospital, Eastern Ethiopia, March 2015

Variables		Frequency	Percent
Adverse effects	Yes	28	28.9
	No	69	71.1
Adverse effects	Abdominal pain	1	1.0
	Fatigue	4	4.1
	Headache	7	7.2
	Nausea and vomiting	11	11.3
	Pain and numbness	1	1.0
	Skin rash	3	3.1

SOURCE: Own survey in 2015

Of 97 respondents, 87 (89.7%) reported that they have not ever missed any dose in the previous one month (100% adherences) and only 10 (10.3%) of them reported to have missed one or more doses in the previous 30 days (Fig 4.3).

Fig 4.3: The number and percentage of HIV positive patients missing doses in the past one month in DilChora Referral Hospital, Eastern Ethiopia, March 2015

The main reasons for skipping doses were 4 (4.1%) forgetfulness, 3 (3.1%) being away from home and Other reasons included sleeping and being busy with other things

Table 4.4: The reasons claimed by HIV positive patients for missing doses in DilChora Referral Hospital Dire Dawa, Eastern Ethiopia, March 2015

Reasons for missing ART doses	Number	Percentage
Being away from home	3	3.1
Fell sleepy during dose time	1	1.0
Being busy with other things	2	2.1
Forgetfulness	4	4.1

SOURCE: Own survey conducted in 2015

In this study the overall adherence rate for study subjects was 95.9 % with 87 (89.7%) of the respondents had 100% adherence, 6 (6.2%) had 95% adherence and 4 (4.1%) had <95% adherence. Sociodemographic characteristics such as gender, age, address, religious, educational levels, occupation, and monthly income were not significantly associated with adherence whereas variables like marital status, living condition and family disclosure were significantly associated with adherence.

Table 4.5: Association of socio-demographic variables and level of adherence rates in DilChora Referral Hospital, Eastern Ethiopia, March 2015

Variables		Adherence levels			Chi-square and P-value
		100%		<95%	
Gender	Male	33	2	2	0.293, P=0.864
	Female	54	4	2	
Age		8	1	1	P=0.438
	15-24	5	3	3	
	25-44	29	2	0	
Address	Urban	86	6	4	P=0.896
	Rural	1	0	0	
Religion	Orthodox	65	4	1	P=0.294
	Muslim	13	1	1	
	Protestant	9	1	2	
Living condition	Living with others	44	0	0	P=0.001
	Living alone	43	6	4	
Marital status	Single	8	3	3	P=0.000
	Married	44	0	0	
	Divorced	13	3	0	
	Widow	22	0	1	
Educational level	Illiterate	20	2	1	P=0.488
	1-6	25	1	2	
	7-11	35	2	0	
	12 and above	7	1	1	
Monthly income	<250	12	0	1	P=0.082
	250-500	9	2	0	
	500-1000	22	1	3	
	>1000	44	3	0	
Family disclosure	Yes	70	5	0	p=12.509, P=0.002
	No	17	1	4	

SOURCE: Own survey results, 2015

One important finding of this study was the identification of effective and feasible strategies used to support adherence to ART. In this study, patients who used memory aids were about forty eight times more likely to be adherent than those who did not.

Table 4.6: Adherence rate and association with behavioral characteristics of adult ART users in DilChora Referral Hospital, Eastern Ethiopia, March 2015

Variables		Adherence levels			Chi-square and P-value
		100%	<95%		
Remainder used	Yes	86	1	0	P=0.000
	No	1	5	4	
Types of remainder	Mobile bell	43	0	0	
	Alarm watch	18	0	0	
	Radio	4	1	0	
	Television	5	0	0	
	Used more than one ai	6	0	0	
	Nothing	1	5	4	
Active substance user	Yes	13	0	1	P=0.333
	No	74	6	3	

SOURCE: Own survey in 2015

Regarding the association of CD4 count and adherence level, recent CD4 count of the study subjects were abstracted and the mean and median CD4 count were calculated even though it was not significant with P value of 0.60, participants that have 100% adherence levels have higher mean and median CD4 count than participants that have adherence levels less than 95%. (Figure 5 Mean & median of recent CD4 count of PLHIV at Dil Chora Referral Hospital in relation to adherence level)

Fig 4.4: Mean and median of recent CD4 at the Hospital

SOURCE: Own survey outputs, 2015

Regarding the association of the clinical characteristics variables with the adherence level none of the variables shows significant association.

Table 4.7: Association of Clinical variables and level of adherence rates in DilChora Referral Hospital Dire Dawa, Eastern Ethiopia, and March 2015

Variables		Adherence levels			Chi-square and P-value
		100%	<95%		
Duration on ART	3-6 month	0	0	1	P=0.271
	7-12 month	3	0	0	
	12-24 month	12	1	0	
	>24 month	72	5	0	
Side effects	Yes	26	1	1	P=0.757
	No	61	5	3	
Functional status	Working	86	5	4	P=0.206
	Ambulatory	1	1	0	
WHO Clinical stage	Stage 1	4	0	0	P=0.498
	Stage 2	3	0	0	
	Stage 3	1	2	0	
	Stage 4	1	0	0	
	Stage T1	50	3	2	
	Stage T2	23	1	2	
	Stage T3	5	0	0	
ARV regimen	AZT-3TC-NVP	15	0	2	P=0.168
	AZT-3TC-EFV	10	0	1	
	TDF-3TC-EFV	32	3	1	
	TDF-3TC-NVP	30	3	0	

SOURCE: Own survey in 2015

In order to triangulate the empirical findings of the quantitative aspect of the study, it is worth presenting and discussing the results for the qualitative aspect of the study. These qualitative results of the qualitative study would help us to understand the reasons for the ART adherence from health care providers, clients (ARV users) & peer educators. The finding of the qualitative study result organized in three sections (thematic areas) i.e. socio demographic characteristics of the respondents, ARV users' knowledge and perception towards HIV /ART and factors related to ART adherence.

In this study HIV/AIDS patients or ARV users were the major group and three FGDs were conducted with ARV users. At the time the ARV users participated in the FGD their age was ranged from 25 to 60 yrs old & female participants nearly twice greater than males (16 Vs 9). In addition two focus group discussions were conducted with 18 educators. In these groups, male participants were greater than females (10 Vs 8)

Moreover, two health workers who were working in ART clinic were also interviewed as key informant to get their perspective with regard to ART adherence.

Table 4.8: Sociodemographic characteristics of respondents

Characteristics (N=45)	HIV/AIDS patients (or ARV users) N=25(55.5%)	Peer Educators N=18(40%)	Healthcare providers N=2 (4.4%)
Gender			
male	9	10	1
Female	16	8	1
Age (years)			
21-29	4	5	1
30-39	11	6	1
40-49	8	4	0
50-59	1	3	0
60-69	1	0	0
Education			
Primary school	0	0	0
Secondary school	4	3	0
High School	21	15	0
College	0	0	0
University	0	0	2
Current marital status			
single	4	6	0
Married or living with partner	15	8	2
Divorced , separate or widowed	6	4	0

SOURCE: Own study of 2015

4.2.4 Knowledge and perception of HIV and ARV

Most of the ARV users seem to have the basic knowledge about HIV diseases & ARV. This might be due to the repeated counseling session or additional trainings received from their peer educators. When participants in the FGD were asked, „what do you know about HIV? A 45 years old male ARV user in FGD responded, HIV disease is caused by virus. Another male client in the study added that there are 3 major means of HIV transmission i.e. unprotected sexual intercourse, mother to child HIV transmission during pregnancy and breast feeding and sharp material contaminated with HIV.

With regard to ART, most of the FGD participants witnessed the advantage of ART referring their experience. When asked: „what do you know about ART? , The male patient said, „After I have started taking ART, my CD4 count increases and then decreases the number of virus in my body. A female client who participated in the study expressed, I become healthy and do my daily activities comfortably since I started taking ART.

Two participants in a peer educator FGD also mentioned two important points: When counseling peers, always emphasize that ART will be taken for life long since it does not cure HIV disease. ARV users are not convinced with this issue they are more likely to have poor adherence, even can be lost to follow up. To add one point on what one of the participants colleagues stated that, another peer educator added, ART helps HIV positive pregnant women to deliver HIV free child.

A 35 years male ARV user raised some limitations or side effects of ART, when he said, I thought ART has many benefits it also have side effects like nausea & vomiting, yellowish stooling and the likes which I & other ARV users experienced

4.2.5 ART Adherence and strategy used

The majority of the FGD participants seems to understand well what ART adherence means. This is probably again because of the counseling services they receive from health workers. When being asked, what does ART adherence mean to you

Male ARV user said: One can be said he /she had a good adherence if one can take the drug with in appropriate time schedule and can have balanced diet. Another female ARV user added that, , We say there is a good adherence if ART is taken according to health care workers advice without missing follow up appointment. ,

FGD participants expressed that there were different factors for non adherence. When asked, non Adherence is a problem. What are the reasons for non-adherence? The following main reasons were mentioned by the participants. The reasons include:

- Traditional & religious belief;
- Poor knowledge to HIV & ART;
- Drug side effect intolerance
- Mobility & being away from home
- Being a discordant family
- Forgetfulness
- Negligence and
- Fear of stigma and discrimination

Female peer educator shared her experience on male dominance & religious belief on ART adherence by saying, When we go to ARV users home to trace defaulter, husband of lost to follow up female ARV user shouted on us and tries to beat us by saying she will never take the ART any more it is not allowed in our religion. f

Another peer educator shared experience about someone's wrong perception, There was one client who stop taking the pills when feeling better but he came back again with worse conditions like low CD4 count & opportunistic infections.

A 26 years old female health care provider also shared her experience related to stigma & discrimination when interviewed. There are HIV patients know, who are on ARV therapy, collect ARV drugs by removing the packaging materials on which the dispensers wrote doses and frequency of drugs administration in their local language because they do not disclose that they

are ARV users to their family .this is probably due to fear of stigma's consequence

In other situation it was mentioned by FGD participants that there are clients who had good adherence and comply health care workers advice. When being asked << those who comply to ART very well, how do they manage to maintain high levels of adherence? A female ARV user stated:,I used Dire TV NEWS program as a reminder to take my pills. In addition since I disclose my status to family my son reminds me to take my dose when I forget to take while I am engaged in other activities. Another male ARV user added: I used my mobile alarm as reminder to take my pills.

The benefit of ART was also found to be a motivating factor for Good ART adherence. One ARV user indicated, Before I start ART I was suffering from repeated opportunistic infection but after have started taking ART the opportunistic infection decreased and started to live better life.

Another female peer educator added, The experience shared by peer educator to new ARV users also facilitate for better ART adherence since we discuss thoroughly with their fears , concerns and how to cope up ,

Quality of care is one of the factors that can probably affect ART adherence, majority of the ARV users and peer educators perceived that the quality of care at the hospital (ART Clinic) is not at acceptable level to clients. When being asked << what do you think of the service you receive at the ART clinic in the hospital? ,Female peer educator said, There is hidden discrimination towards ART users by health workers themselves, manifested by denying basic diagnostic and opportunistic treatment services.

Another peer educator added, Health workers usually show up late to the ART clinic hence clients wait a long time to see health workers, moreover many clients record are lost or cannot be retrieved from medical record unit which creates unnecessary bureaucratic discomfort.

With regard to health workers willingness to serve ART clients, additional malpractices was

reported by peer educators like not giving appropriate time to clients, not treating client with respect and feeling of bored, even prescribing mistaken drugs was reported. For participants were also asked about the convenience of the clinic. When asked how do you think about the location and Convenience of the ART clinic?

Female ARV user said: The ART Clinic and EPI services at the Clinic are within the same corridor which creates congestion on the corridor.

Another ARV user added: There are no enough windows for ventilation around the corridor which facilitate airborne infection transmission.

One peer educator also indicated that,

Our role for ART adherence is not well recognized by the hospital evidenced by giving poor attention to the program. For example though we engage in transporting weak ART clients within the hospital, the hospital is not volunteer to give us basic infection prevention materials like glove , soaps for peer educators. For example I got some stomach ache recently when I ate my meal after handling a debilitated patient without glove forgetting to wash my hand.

With regard to ART services affordability, it is known that ARV treatment being given for free but there are related costs along with the free ART treatment .When being asked how do you think about the cost of ART services and other related treatments? One ARV users stated, , Usually we can't get treatment for opportunistic infection for free from the hospital. We are obligated to buy from out of pocket. ,

Other related cost mentioned by participant was transport cost incurred related to fear of stigma and discrimination. When being asked: What do you think about the cost for ARV and how much you spent for transport? , One peer educator indicated: know one patient who is poor and expends 10 birr per visit to come to the hospital & this is very hard for her to strictly attend her follow up and refill. Another peer educator added: There are some clients who come from out of Dire Dawa to take ART to avoid stigma and discrimination which incurs additional transport cost to attend their appointment.

4.2.6 Factors affecting ART adherence

According to ARV users and peer educators there are different supports from community and nongovernmental organization which include financial, food, emotional supports based on the relevant stakeholder's interests.

One male ARV users indicated, "Since I disclose my HIV status to family I got emotional support and care from family." Another female patient added, "Currently the stigma and discrimination level seems decreased. In the earlier time I know patient who forced to divorce because of her HIV status even the community was not volunteer to rent house for HIV positive patient."

On contrary to the above stated respondents one peer educator argued by saying, "There is hidden discrimination both in the community and surprisingly by health care workers themselves. In the hospital debilitated ART patients are not equally treated by health care workers manifested by denying basic diagnostic and treatment services with silly reasons."

He added, "I myself was discriminated at hair salon. The owner of the salon denying me to have hair cut by mentioning silly reasons. After he was aware I am HIV positive, another patient added the discrimination extends to our children, when stated, "Currently Children born from HIV positive family, who disclose their status to the community, also get discriminated by their peers."

With regard to the support from government and nongovernmental organization most of FGD participants agreed that there are some encouraging effort to support PLHIV. They also raised some draw back concerning support to PLHIV which needs strengthening. When being asked what support available from family, community and organizations.

One male patient appreciates the effort of Dire Dawa HAPCO by saying, "Dire Dawa HAPCO organized PLHIV into an association and let them to save money and gain for small scale enterprises as income generating activities." Another ARV user added, "There are non governmental organizations which serve food and infection prevention kits at the ART,

One Peer educator witnessed that currently community care awareness is improving because there are individuals who give support by buying OI drugs, providing shelters and financial support to PLHIV.

Despite the above facts peer educators indicated issues which need to be addressed by the Government of Ethiopia as they said, Community conversation with coffee ceremony activity is currently interrupted I think this activities need to be strengthened. Another peer educator added that there is a need to work on targeted group like on street child commercial sex worker etc. As there is a high lost to follow up among these groups.

FGD participants also were asked about their participation in any group, association or community based program. One female ARV user said I am a member of small scale enterprise which can generate income for daily life. Another peer educator added his experience by saying; Our colleague participates as chair person of PLHIV association and even as member of regional parliament. Another female ARV user shares her experience saying, I am participating in social mobilization activities and other social gathering and .Eku comfortably.

In summary the qualitative findings revealed that there is basic knowledge among ARV users and peer educators about HIV, ART and adherence however being away from home, traditional and religious beliefs, fear of stigma and discrimination, forgetfulness and negligence are barriers to ART adherence mentioned by participants. Moreover the quality and acceptability of the service at the hospital (ART clinic) was perceived as poor.

4.3 Discussion

ART has changed the clinical course of HIV infection and making it a chronic manageable disease but strict adherence is a priority consideration to get hold of the intended treatment outcomes. In this study, 97 PLWHA, who were on ART for at least 3 months prior to data collection period, were included. The level of adherence to ART in the hospital was relatively higher (95.9%), which was in agreement with optimal adherence (95%).

This figure was higher than studies from Ethiopia (81-28.3%) Africa (54-92.9%) and the world's average adherence rate of 70% and it was also higher than the study done in Dessie which was 90%. However, 10.3% of the patients reported to have ever missed one or more doses in the previous 30 days prior to the interview date, which was lower than 75% adherence in Nigeria, 30.9% in Italy, 25.8% in South Ethiopia, 18.4% in Tanzania and 17.7% in Dessie. However, findings in developed countries showed that 33% of the respondents reported missing at least one dose within the past month.

This finding was consistent with several studies that corroborated that developing countries showed comparable or better levels of individual adherence than what was seen among North American and European populations. The improvement might be due to continuous efforts to strengthen the health system infrastructure, increase public awareness, involve community health extension workers, build staff capacity, and step up the number of sectoral activities to prevent and control HIV/ AIDS epidemic and the methods used to assess the average rate of adherence might be the possible reasons for the high rate of adherence in the study area.

So long as there were missed doses, it would be sound to expect reasons for the missing. The main reasons cited in connection with skipping doses were forgetfulness, being away from home and being extremely ill in order of importance, among many others which were similar with findings in Tanzania. This study thus found out that forgetfulness was the most frequently claimed reason for missing doses, which is comparable with findings conducted in Addis Ababa (33.9%).

The qualitative finding also showed that the self-reported knowledge about adherence is good. Among FGD participants. But when thoroughly discussed individuals' practice; adherence was affected by different factors. Like the survey findings, being away from home, traditional & religious beliefs, fear of stigma & discrimination, forgetfulness & negligence were also mentioned as barrier factors for adherence. Moreover, one important point mentioned by FGD participants which can affect adherence was the quality of care given at the clinic which needs improvement.

One important finding of this study was the identification of effective and feasible strategies used to support adherence to ART. In this study, patients who used memory aids were about forty-eight times more likely to be adherent than those who did not. This is true according to several

other studies. The possible explanation for this could be that memory aids were particularly important given that patients quoted forgetting and being away from home as the primary reasons for missing doses. The qualitative study also shows that using different kinds of aid like mobile phone alarm, TV NEWS program were mentioned to help better adherence.

The findings of this study must be interpreted in the light of its limitations. There is no gold standard for measuring adherence, and our measurement of adherence based on PLWHA self reports of missed doses which may be subject to social desirability and recall biases. The literature, for example, suggests that PLWHA tend to overestimate adherence. However, many other studies document that well collected self-reported data clearly correlate with virologic changes and are more practical in most settings. Further, in the present study, adherence information was collected by clinical research staff, so there was less reason for participants to overreport adherence.

One of the strongest part of this study were to relate the current CD4 count rate to adherence level and this was the limitation of most studies done in assessing adherence level and the finding showed that those who have 100% adherence levels have higher mean and median CD4 count than participants that have adherence levels of and <95% and this can help us a base for future studies that will assess the association of adherence levels and patients immunological response.

Chapter 5

Conclusion and Recommendation

5.1 Conclusion

The level of adherence to ART using supported method among PLWH at Dil Chora Referral Hospital was relatively higher. According to the survey & qualitative study the major reasons for missing dose(s) were forgetfulness, going away from home, being busy with other things, religious /traditional beliefs & fear of stigma & discrimination .The study also revealed a significant association between rate of adherence with living conditions, family disclosure, marital status and use of different memory aids, like alarm watches and mobile alarm.

The qualitative study shows that community based social mobilization activities & the quality of service at the hospital need to be strengthened & improve respectively.

5.2 Recommendations

For the hospital /ART clinic

- Ø Health workers and social workers should promote patients to disclose their HIV status to their families, relatives or friends.
- Ø Interventions to promote adherence should focus on areas, such as promoting use of different memory aids like alarm watches and mobile bells
- Ø Quality of care (acceptability, affordability, quality of time spent with ARV users, record keeping issues) need to be improved.

Dire Dawa administrative HAPCO

- Ø Community level social mobilization activities need to be strengthened

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Appendices

Appendix A: Structured interview schedule

Questionnaire for Assessment of magnitude and factors Affecting Antiretroviral Therapy (ART) Adherence among People Living With HIV (PLWHIV) in Dil Chora Hospital, Eastern Ethiopia MSW Project Work Dissertation Proposal (MSWP-001)

General Identification

Questionnaire ID #	
Date of Data Collection	
Unique patient identification code	
Unique ART Code (UAN)	

Section one

1.1	How old are you?	Enter age in years _____	
1.2	Sex	Male 2. Female	
1.3	What is your marital status?	1. Single 2. Married/in union 3. Widowed 4. Divorced 5. Separated	
1.4	Residence	Urban 0. Rural	
1.5	What is your ethnicity?	1. Amhara 2. Oromo 3. Guragie 4. Tigre 5. Other, Specify _____	
1.6	What is your religion?	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Other, specify _____	
1.7	Can you tell me if you can read or write?	Yes 0. No →	if no, go to q1.10
1.8	Did you attend school?	Yes 0. No →	if no, go to q1.10
1.9	What was the highest		

	grade you completed?		
1.10	What is your main occupation?	1. Farmer 2. Government employee 3. Private organization employee 4. Student 5. Housewife 6. Self employed 7. Jobless (Family dependent) 8. House maid 9. Other, specify _____	
1.11a	Does your family have (only for URBAN Residents): Electricity? Watch/clock? Radio? Television? Mobile telephone? Non-mobile telephone? Refrigerator? Table? Chair? Bed with cotton/sponge/spring mattress? Electronic mitad? Kerosene/pressure lamp?	1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No 1. Yes 0. No	

Section 2: Adherence to ART			
2.2	How long have you been on ART?	In months : _____	
2.5	Most medications need to be taken on schedule, such as "twice a day" or "three times a day". How closely did you follow your specific schedule over the last 4 days? [Don't Read responses]	1. Never 2. Some of the time 3. About half of the time 4. Most of the time 5. All of the time	
2.6	How many doses do you have to take in one day?	Doses:	

2.7	Thinking back over the past four days, have you missed any of your doses	1..... Yes 0. No	
2.8	How many doses did you miss yesterday? [enter number]	Number of doses:_____	
2.9	How many doses did you miss 2 days ago?	Number of doses:_____	
2.10	How many doses did you miss 3 days ago? [enter number]	Number of doses:_____	
2.11	How many doses did you miss 4 days ago? [enter number]	Number of doses: _____	

Section 3: Data Abstraction Form

NO	QUESTIONS	CODING CATEGORIES	SKIP
3.1	Current functional status	1.Working 2.Ambulatory 3.Bedridden	
3.2	Current weight	Kg	
3.3	Most recent CD4 count		
3.4	Most recent staging: Look at the follow card and circle the appropriate corresponding staging either WHO or T Staging WHO staging coded as 1, 2, 3, or 4 T Staging coded as T1, T2, T3, or T4	1 2 3 4 T1 T2 T3 T4	
3.5	Medication Adherence Level	Good Fair Poor	

Appendix B: Interview guide/protocol for key informants

I) knowledge , attitude . perception& beliefs

1. What do you know about HIV/AIDS ? (probe on the following cause of HIV infection,transition to AIDS, prevention for themselves and others.)
2. What you know about antiretroviral and ART? (probe on the following: ART benefits, risks of missed doses, life long treatment, side effects).
3. What were your expectations when you had started ART? Were the expectations met or not why?

II) ART adherence& strategy used for adherence

4. What does ART adherence mean to you? (Make sure all participants understand the adherence concept)

5. Do you think non-adherence is a problem among ARV users? If so, what are the reasons for failure to adhere? (side effect, disease stage, knowledge & attitude, ‡
6. Some others comply the ART very well. Do you know how they manage to maintain high levels of adherence. (probe: family, friends, mobile phone, clock etc)
7. What do you do if you forget taking your pill?

III) quality of care (Acceptability, affordability, accessibility)

acceptability

8. What do you think of the service you receive at this clinic? (General, opened and then probe as below:
 - Ø Confidentiality
 - Ø respect,
 - Ø quality of time spent with patient
 - Ø waiting time to see nurse/dr
 - Ø How do you think health workers competence
9. What do you think about the counseling that you have receiving? (Probe about the importance of adherence)

accessibility

10. How do you think about distance & physical location, convenience of the clinic /hospital

Affordability

11. What do you think about the cost for ART service & other related specialized treatments?
12. How much you spent for transport to clinic for each visit?

III) Social & family support

13. What support is available in a family, the work place, in the community? (Probe about stigma and discrimination, financial & emotional support?)
14. What types of socioeconomic factors deterring PLHAs adherence to ART?

15. Have you participated in any social group &/or community based program ? (club, peer educator, home based care support)
16. Have you ever had any experience of being treated differently because of your HIV status?
17. What do you think could be done to help adhere to ART?
18. Do you have any comment or suggestion for us?

Thank you!

Appendix C: FGD schedule/checklist

1. Do ART patients face any problems with adherence to their medication? (Probe:
 - 1.1 Demography (age, sex, education, occupation, socioeconomic status, marital status)
 - 1.2 Information (knowledge, self efficacy, coping etc)
 - 1.3 Motivation (beliefs, attitude towards ART, mental status, treatment outcome, support from family, community)
 - 1.4 Behavior skills (pill taking, scheduling, adherence etc)
 - 1.5 Service quality (trust to health provider, interaction b/w Provider-client, facility and equipment)
 - 1.6 Regimen's simplicity, toxicity, disruption of daily activities
 - 1.7 Accessibility (cost, distance, time)
2. What are the perceptions/beliefs/attitudes of the community on HIV/AIDS, treatment modalities?
3. How easy for AIDS patients to access to ART in your community? (Probe on stigma, discrimination, logistical issues for reaching the clinic etc.)

Guide for in-depth interview with health care workers

1. How do you perceive adherence level of ARV users in this clinic?
2. What facilitating & barrier factors you observe for ART adherence from your observation?
3. How do you perceive the quality of care the hospital give to ART client?
4. Any general comment you want to add?

Appendix 1: PROFORMA FOR SUBMISSION OF MSW PROJECT PROPOSAL FOR APPROVAL FROM ACADEMIC COUNSELLOR AT STUDY CENTRE

Enrolment No ID 099125560

Date of Submission April 27, 2015

Name of the Study Centre St. Mary's University

Name of the Guide Sebsib Belay (Mr)

Title of the Project: Adherence to Antiretroviral Therapy and Associated Factors among Patients Living with HIV/AIDS at Dil C hora Referral Hospital in Dire Dawa, Eastern Ethiopia.

Signature of the Student: _____

Date: April 27, 2015

Enrolment No ID 099125560

Approved/Not Approved

Name Kassahun Haile Giorgis

Address: Dire Dawa, Ethiopia

Date April 27, 2015

Name: Sebsib Belay (Mr)

School of Graduate Studies

St. Mary's University

Address of the Supervisor Addis Ababa, Ethiopia

Signature: €€€€€€.....

Adherence to Antiretroviral Therapy and Associated Factors
among Patients Living with HIV/AIDS at Dil Chora Referral
Hospital in Dire Dawa, Eastern Ethiopia

MSW Dissertation Research Project Proposal
(MSWP-001)

Kassahun Haile Giorgis
Enrollment Number: 099125560

Project Supervisor
Sebsib Belay (Mr)

Indira Gandhi National Open University
School of Social Work

April 2015
Addis Ababa, Ethiopia

1. Introduction

Globally, there were 34.0 million people living with HIV at the end of 2011, the majority of them reside in sub-Saharan Africa. This is, with nearly 1 in every 20 adults (4.9%) living with HIV and accounting for 69% of the people living HIV worldwide (UNAIDS, 2012).

Ethiopia is among the countries most affected by HIV and AIDS. There were an estimated 789,960 people living with HIV. According to the single point HIV prevalence estimates, the adult HIV prevalence in 2011 was 1.5 % which put the prevalence among males and females at 1.0 percent and 1.9 percent respectively (EHNRI & FMoH, 2012).

In 2011, 1.7 million people worldwide died from AIDS related causes, down 24% from the peak in 2005. The number of people dying from AIDS related causes in sub-Saharan Africa declined by 32% from 2005 to 2011, although the region still accounted for 70% of people dying from AIDS in 2011 (UNAIDS, 2012). In Ethiopia, there were 53,831 people who died from AIDS related death with an estimated 24,236 new HIV infections annually in 2011 (EHNRI, 2012).

Regarding the prevalence of HIV in Dire Dawa Administration, the estimated adult prevalence of the Region for the 2012 EHNRI report was 4%; 5.0% in females, 2.6% in males, and 0.9% in rural and 2.6% in urban, which translates to 281 new HIV infections on the top of over 9,923 people living with HIV in 2011 (EHNRI, 2012).

HIV/AIDS has been fueling child morbidity and mortality and many children have been orphaned by it in Africa than anywhere else (Beith, 2006). The tragic impact of HIV/AIDS in Ethiopia is still adversely affecting developments. Productivity and increased health care burdens to manage the disease have significant economic implications to the country (Abiola, 2007).

The fact that HIV/AIDS is a disease of no cure; its impacts are multifaceted and disrupted the life of victims, their children and family as whole. Later, entry of HAART in the continuum of medical care has brought hope and tangible health outcomes. Despite the introduction of HAART has helped to reduce the incidences of opportunistic infections and improves survival and quality of life, patients are experiencing difficulty in adhering to the treatment as this long term therapy which may be complex in terms of pill burden, dosing, specific dietary restriction (Ikuma, 2011).

HAART has thus improved the quality and quantity of the lives of many of the People Living with HIV/ AIDS (PLHIV) since its introduction. However, nearly a perfect adherence is crucial in order to attain the ART success. But, adherence is a complex feature influenced by numerous factors. Studies revealed that the initial optimism regarding the efficacy of HAART has currently dissipated and there are fears that sub optimal adherences, allowing ongoing viral replication, facilitate the emergences of HIV resistant variant and cutback the treatment options for the individual patients. Non-adherence has also implication for the broader public health since it might increase the risk of HIV transmission of resistant strains, which ultimately put patients out of alternatives to manage their disease (HAPCO, 2007; Mills, 2006; 2010).

There have never been standard tools for measuring adherences with absolute precision and truthfulness in outpatient clinical settings. And the average rate of adherences varies with the method used to measure it. Nevertheless, for most patients there is a common consensus that nearly perfect (95%) adherence is necessary to achieve full and durable viral suppression, thereby full viral suppression allows for maximal reconstitution or maintenances of immune function, minimizes the emergences of drug resistant virus and thereby obtaining the intended therapeutic effect (Machtingn, 2005) Hence, it is imperative to undertake an assessment study on the degree of adherence to ART and to identify factors associated with adherence of HIV positive patients who were on ART at Dil Chora Referral Hospital, Dire Dawa, Eastern Ethiopia.

2. Statement of the problem

In HIV care and treatment, adherence to ART is highly important. Achieving at least 95% adherence is vital for preventing viral resistance and treatment failure (Miller, 2006). Adherence to Anti-Retroviral Therapy (ART) among people living with HIV/AIDS is multifaceted problems and challenges; such as sociodemographic and economic characteristics of PLHIV, lack of adequate and quality supplies of necessary input on time in different context and for various clients at different level, etc. The effective and efficient provision of ART service(s) in different context and at different level requires a combination and an integration of antiretroviral medication therapy (Abiola, 2007).

The efficacy of combination of antiretroviral medication therapies (ART) for the treatment of HIV-disease is now well documented. Combination therapies can inhibit viral replication and reduce viral load to a point where viral particles are undetectable in the blood of these individuals. Significant and sustained suppression of HIV replication is associated with improved clinical outcomes. However, these benefits are only tenable when Adherence to precise dosing schedules is rigorous and other treatment requirements are followed. Partial or poor adherence can lead to the resumption of rapid viral replication, poorer survival rates, and the mutation to treatment-resistant strains of HIV.

It is believed that poor antiretroviral therapy adherence is strongest predictor of progression to AIDS and death after starting their treatment. Incomplete adherence to ART is, however, common in all groups of treated individuals. According to the 2010 UNAIDS Report, the average rate of adherence to ART was approximately found to be 70%, despite the fact that long term viral suppression requires near perfect adherence. The resulting virology failure diminishes the potential for long-term clinical success. Risk of drug-resistant strains of HIV is also one of the major treats that may lead to the second line ART which is not cost effective.

Poor adherence of ART could be a major challenge to decrease the outcome of ART program;

consequently, it creates a problem in the community at large in terms of socially, economically, etc. Therefore, the identification of these major factors contributing for poor adherence of ART and then for designing effective strategies should be supported by empirical data generated through conducting research using social work concepts, methods and/or techniques

Sociodemographic and economic characteristics and factors may sometimes come up in the context of ART service provision. The medical and social workers should have been informed so that they could manage these problems and challenges in different contexts while working with different clients and at different level.

3. Research questions

This study addressed the following research questions:

- What are levels of knowledge and perception of HIV and ARV among the patients at Dil Chora Referral Hospital in Dire Dawa City Administration?
- To what extent, do the patients adhere to the uses of ART?
- What types of strategy are used by the patients in order to adhere to the ART provided at the Dil Chora Referral Hospital in Dire Dawa?
- What are the behavioural and clinical characteristics of the patients at the Hospital?
- Do the behavioural and clinical characteristics of the patients at the Hospital relate to their level of adherence to ART?
- What are the common adverse effects of ART faced by the patients?
- What are the reasons for claimed level of ART adherence by the patients?
- Are there associations between sociodemographic characteristics of the patients and their levels of adherence to ART at the Hospital? And
- What factors are associated with adherence to ART among the patients at Dil Chora Referral Hospital in Dire Dawa City Administration of Eastern Ethiopia?

4. Objectives of the study

The study has both general and specific objectives to be achieved and then to address the abovestated research questions.

4.1.1. General Objective

The study intended to o assess the magnitude of adherence to antiretroviral therapy (ART) and associated factors among people living with HIV/AIDS at Dil Chora Referral Hospital in Dire Dawa, Eastern Ethiopia.

4.1.2. Specific Objectives

Specifically, this study aimed:

- o To assess the magnitude of adherence to ART among people living with HIV/AIDS at Dil Chora Referral Hospital Dire Dawa, Eastern Ethiopia;
- o To identify factors associated with adherence among the patients living with HIV/AIDS at Dil Chora Referral Hospital in Dire Dawa, Eastern Ethiopia;
- o To investigate associations between the behavioural and the clinical characteristics of the patients with their adherence to ART at the Hospital; and
- o To assess knowledge and perception of HIV ARV among the PLHIV who are clients of the ART Unit of Dil Chora Hospital in Dire Dawa.

5. Research design and methods

This study will employ both quantitative and qualitative research methods. The quantitative research method, particularly descriptive cross sectional sample survey, is used to assess the magnitude and associated factors of adherence to ART among people living with HIV/AIDS at Dil Chora Referral Hospital in Dire Dawa, Eastern Ethiopia. In order to triangulate the findings of the quantitative aspect of the study, qualitative research methods were also used.

The researcher will use non-experimental research design which involves a mixed research method. The mixed method would use both quantitative and qualitative research methods. Quantitatively, the researcher used descriptive cross sectional sample survey in order to accurately obtain pieces of information on the magnitude of adherence to ART and factors affecting the patients' adherence to the treatment at Dil Chora Referral Hospital in Dire Dawa, Eastern Ethiopia. In order to generate qualitative data and complement the quantitative data in the study, the researcher employed semi-structured interviews with key informants, focus group discussions with a group of 12 persons, and documentary analysis using interview guide/protocol, FGD schedule/checklist and documentary analysis template, respectively.

6. Universe of Study

The universe of the study is composed of all PLWHIV who were on ART. There were about 4391 clients on ART (male & female) in Dire Dawa Town. Among those clients, about 2244 (which is >50%) are following up their ART services at Dil Chora Hospital. Therefore, those clients who were taking their treatment at the Hospital were considered as the study population for the study.

7. Sampling Method

All PLWHA taking ART in Dil Chora hospital constituted source population whereas all PLWHA getting antiretroviral treatment services within the study period represented study population. The study covered all consecutive patients who attended the Pharmacy for refill over two weeks study period and hence, convenience sampling technique will be used. As to the inclusion and exclusion criteria, study participants that were aged 15 and above years, willing to give informed consent and those that were on ART for more than 3 months were included in this

study. For the qualitative study peer educators will be contacted to recruit 25 volunteer ARV user and all volunteer peer educators to participate in the study. Also two health workers were included in the qualitative study.

8. Data Collection tools and procedures

In the study, both structured questionnaire (interview schedule) and checklist are employed. The survey instruments (questionnaires) developed by the researcher and administered to achieve the objective of the study. In addition, the checklist that consists of questions or items for conducting documentary analysis of relevant documents from different sources was used. Moreover 3 types of guiding questions will be prepared for the FGD and key informant interview. All these research instruments were tested. After that the questionnaire Guide was standardized and finalized for actual survey purpose. The structured questionnaire contains closed ended questions. However there are some mixed and open ended questions. Moreover, ART records of those study units are critically reviewed to identify the clients' adherence status and their status is labeled as poor adherent and good adherent clients based on the national criteria for treatment adherence. Therefore, the questionnaires were administered for the study units regardless of their adherence status.

A cross sectional study will be conducted to collect data for assessment of adherence and associated factors. The adherence rate for the past one month (February, 2015) prior to the data collection period was calculated by considering number of doses taken divided by the number of doses prescribed multiplied by 100%. Eventually, aggregate mean adherence was calculated for the entire period. One drug is regarded as one dose and then adherence to regimen was approximated by the proportion of doses taken in a given period according to the following formula.

Where,

P = No of doses prescribed;

M= No of doses missed and

A= Rate of adherences

In the study, there are both independent variable and dependent variable. The dependent variable

is adherence level but the independent variables include gender, age, address, religion, living condition, marital status, educational level, monthly income, family disclosure, behavioural and clinical characteristics of patients, but to mention just a few. Generally, the study period was from March to October 2015.

9. Data Processing and Analysis

For the survey the completed interview schedule or questionnaire will be scrutinized, verified, edited and arranged serially. For coding choices in the instrument, a code sheet was prepared accordingly. Then, based on this coding, code book will be prepared and entered and processed on computer using the latest version of SPSS. During the data analysis, different statistical techniques were applied using frequency distribution consisting of frequency and percentage, measure of central tendency (mean, mode and median) - square test will also be done to look for association. Moreover, the qualitative data was transcribed & categorized by main theme manually & presented in narrative form to supplement the quantitative findings.

10. List of tables on sociodemographic and economic characteristics, adherence to ART, factors affecting adherence to the treatment and so on will be incorporated in the final project report.

11. Organization of the thesis

The MSW thesis consists of five chapters. The first chapter introduces the background, the problem, problem statement, research questions, objectives of the study, definition of key terms, limitations of the study, and organization of the thesis. Chapter two reviews and presents relevant literature on ART adherence, and factors associated with the adherence. The next chapter dwells on study design and methods in general, and description of the study area, study design and methods, universe of the study, sampling method, data collection tools/instruments and procedures, data processing and analysis, and ethical considerations in particular. Chapter four is on data analysis, presentation and discussion. Finally, it draws conclusions from major findings of the study and then suggests social work interventions at different levels of the ART Programme in the study area.

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