ADHERENCE TO ANTI-RETROVIRAL THERAPY AMONG PEOPLE LIVING WITH HIV AND AIDS IN FAR WEST, NEPAL

A Dissertation Submitted for the Partial Fulfillment of Requirements for
Bachelor in Public Health (BPH)

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APPROVAL SHEET

This is to certify that **Mr. Kiran Bam** of final year of Bachelor in Public Health (BPH) has satisfactorily completed and defended dissertation entitled **"Adherence to Anti Retroviral Therapy among People Living with HIV and AIDS in Far West, Nepal"** as a partial fulfillment of the requirements of the Bachelor in Public Health under the Faculty of Medical Sciences, Nobel College, Pokhara University.

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RECOMMENDATION

I certify that the dissertation by **Mr. Kiran Bam** on **"Adherence to Anti Retroviral Therapy among People Living with HIV and AIDS in Far West, Nepal"** was written under my direct supervision as a partial fulfillment of the requirements of Bachelor in Public Health (BPH). He worked under my supervision for six months for the completion of this dissertation. I further confirm that this original work has not been part for any other degree. Such materials as have been obtained from various sources have been duly acknowledged in the dissertation. I, therefore, recommend that **Mr. Kiran Bam** for the presentation of this work.

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ABSTRACT

Adherence is a term used to describe the act of following a course of medication in exactly the manner it is prescribed. Adherence is sometimes also called compliance. Adherence to ART is second largest predictor of progression to AIDS and death after CD4 count/reduced HIV RNA replication. In ART, adherence is essential for successful treatment and sustained viral control. To achieve treatment success requires near-perfect adherence to combination ARV regimens. Very little is known about the adherence to ART in Nepal despite the initiation of the program more than half a decade ago.

The general objective of the study is to determine the Adherence ART among People Living with HIV and AIDS in Far West, Nepal. The specific objectives are to determine the adherence rate to ART; to asses factors associated with adherence to ART; and to generate recommendations in the development of adherence optimizing interventions.

This is a cross sectional study which employed both quantitative and qualitative methods to identify magnitude of adherence and to identify protective and risk factors to adherence to ART among HIV infected persons. The semi structured questionnaire schedule was adapted from The Challenges to ART, study conducted in Botswana, Tanzania and Uganda to understand access to adherence. The questionnaire was pre tested and modified to cultural context then translated in Nepali. Study was conducted in Far West of Nepal from May 2009 to September 2009 in all four ART sites. Clients of age 15 years above and taking ARVs for at least 3 months were enrolled in the study.

A total of 176 samples allowed with 95% CI and 5% error proportionately ART sites were drawn. Random sampling technique was employed among the client visiting the ART centre. Data management and analysis was done in datasheet created in Statistical Package for Social Sciences (SPSS). Mean and standard deviation were calculated for the adherence rate. Bivariate analysis of variables was carried out to determine the factors for adherence. Verbal informed consent was taken from each research participants before

data collection following the ethical norms and values as stated in the National Ethical Guidelines for Health Research in Nepal, 2001.

The overall adherence for one month was 84 percent. The major reason for missing the drugs was identified as being too busy and forgetting which are closely interrelated. Similarly, travel distance and travel cost was also identified as cause for discontinuation of the treatment. Those who were more than 95 percent adherent responded that use of watch, electronic devices such as mobiles and mass-media facilitated them to take the drugs regularly.

The study showed a significant association between the adherence and the area of residence, prior alcohol and smoking habit, disclosure of the HIV status. Other factors that were found to be significantly affecting the adherence are the perceived benefit of the ART and Patient satisfaction with the provider. Travel Cost was identified as one of the significant barrier to adherence.

There was no significant association of adherence with age, sex, religion, and education al and employment status. The finding that age, sex, marital status, education level and employment status did not significantly affect adherence was similar to other studies elsewhere. The results established that being away from home contributed to poor timing of taking drugs among the patients.

The adherence rate found in this study seems to be encouraging. The findings emphasized the importance of multiple periodic assessments of adherence errors. Timely detection of non-adherence behaviors and appropriate monitoring of patients' difficulties with ART could potentially help patients to maintain adherence and therefore improve the treatment outcome. Future research should investigate the cause of disparity in adherence between refills and time of taking ARV drugs, utilization of multiple measures of adherence to be incorporated in the care plans and multiple-target interventions focused to resolve the barriers to adherence should be implemented based on barriers defined to be potentially or actually present.

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ABBREVIATIONS

AIDS	Acquired Immune Deficiency Syndrome
ART	Anti-Retroviral Therapy
ARV	Antiretroviral
CD4	Cluster of Differentiation
EDM	Electronic Drug Monitoring
HIV	Human Immunodeficiency Virus
IEC	Information Education Communication
NCASC	National Center for AIDS & STD Control
NGO	Non-Governmental Organization
PLHA	People Living with HIV/AIDS
RNA	Ribo Nucleic Acid
STD	Sexually Transmitted Disease
UNAIDS	Joint United Nations Programme on AIDS – Secretariat
WHO	World Health Organization

CHAPTER I
INTRODUCTION

1.1 Background

Since the launch of World Health Organization (WHO)'s '3 by 5' initiative in 2003, many countries in Sub-Saharan Africa have established National Anti-Retroviral Treatment (ART) program. Although the WHO target of providing access to ART for 3 million people by 2005 was not achieved, by end of 2005 an estimated 1.3 million people in low and middle income countries had access to treatment - about 20 percent of those estimated to be in need (UNAIDS/WHO, 2006). By mid 2005, the WHO target had already been overtaken by an even more ambitious aim. In July 2005, the Group Eight (G8) of industrialized countries committed to the goal of achieving as close as possible to universal access to treatment for all those who need it by 2010 (UNAIDS, 2006).

It is estimated that more than 3.6 millions of people living with HIV/AIDS in countries of South East Asia Region, Five Countries such as India, Thailand, Myanmar, Indonesia and Nepal has account for majority of the regional burden (WHO, 2008). Every day over 6800 persons become infected with HIV over 5700 persons die from AIDS, mostly because of inadequate access to preventive and treatment services (UNAIDS, 2008).

ART coverage has increased from no free or publicly available treatment three years ago to 13 percent of those estimated to need ART accessing free treatment (USAID Nepal, 2008).

The Introduction of ARVs in the 1990s brought new hope to people living with HIV. More recently, the increased availability of treatment has dramatically improved survival rates and lowered the incidence of opportunistic infections in people with AIDS (UNAIDS, 2005).

Standard ART consists of the use of at least three ARV drugs to maximally suppress the HIV and stop the progression of HIV disease. Huge reductions have been seen in rates of death and suffering when use is made of a potent ARV regimen. ART does

not cure life but it helps to prolong the life of the person. It tries for the better quality of life on an individual.

About 33 million people are now living with HIV, of whom more than 30 million live in low and middle-income countries. WHO estimates that at least 9.7 million of these people are in need of ART. As of December 2007, 3 million people had access to ART in low and middle-income countries. WHO is providing countries with ongoing guidance, tools and support in delivering and scaling up ART within a public health approach (WHO, 2009).

National Centre for AIDS and STD Control (NCASC), Ministry of Health and Population, Government of Nepal, estimated about 70,000 people living with HIV and AIDS in December 2007. The adult prevalence is 0.49 percent at the end of 2007 and the percentage of HIV infected people receiving ART is 13 percent. In Far west hills there are 16 percent of total HIV infections. There is of an estimated 19,000 persons in need of ART in Nepal (NCASC, 2008).

Adherence is defined as 'the act or quality of sticking to something-to adhere to something'. In the context of treatment with medications, adherence means a more collaborative process between the patient and provider. It is the term used to describe the act of following a course of medication in exactly the manner it is prescribed. Adherence is sometimes also called compliance (WHO, 2006b).

ART adherence

Second largest predictor of progression to AIDS and death after CD4 count/reduced HIV RNA replication (Bangsberg et al, 2001). It is essential for successful treatment and sustained viral control. Optimal adherence (>95%) results sustained plasma drug concentration inhibiting viral replication. Adherence should be assured before initiation of ART. The patient should understand fully the importance of regularity of ART. Ongoing adherence counseling and patient education should occur at every follow-up-visit. Drug-resistant strains of HIV selected through ongoing replication in the presence of ART also can be transmitted to uninfected or drug-naive patients, leaving them with fewer treatment options (Williams & Friedland, 1997)**.**

Nepal's initiatives related to ART & ART adherence

In Nepal, NCASC had launched the free ART program since February 2004 in Teku Hospital and developed ART Guideline in 2004 which attempts to represent the current state of knowledge; it is evitable that as HIV/AIDS is a rapidly evolving medical field. It helps for the rationale use of the drugs. Till date there are 23 ART sites where 2,544 clients on treatment, as of March, 2009 (NCASC, 2009). The ARV logistic system in Nepal is managed by NCASC itself with minimal co-ordination with Logistic Management Division (LMD). In Far West Region there are altogether Four ART Sites viz. Seti Zonal Hospital, Mahakali Zonal Hospital, Doti District Hospital and Achham District Hospital where altogether 565 clients are on treatment (NCASC, 2009).

1.2 Statement of the Problem

The Far West Region of Nepal is considered by many to have one of Asia's fastest growing AIDS epidemics (Sharma & Pant, 2006). The high migration rate (at least one male member from 80-90% of the household) in Far West Region has contributed for the rapid spread of HIV/AIDS. About 10% of the migrants returning from Mumbai, India have been tested HIV positive (Sharma & Pant, 2006).

In South East Asia, estimated number of the people requiring ART is 1.1 million but the coverage of the ART is 14% only. In Nepal only 75% of the people are getting ART and unmet need is 94.7% (Panos, 2006).

Adherence to ART is second largest predictor of progression to AIDS and death after CD4 count/reduced HIV RNA replication (Bangsberg, et al, 2001). In ART, adherence is essential for successful treatment and sustained viral control. To achieve treatment success requires near-perfect adherence to combination ARV regimens. Adherence to an ARV treatment regimen involves taking all pills in the correctly prescribed doses, at the right time, and in the right way (Carter, 2005).

Research and daily practice have shown that strict adherence is difficult to achieve for many of the HIV-infected patients treated with antiretroviral therapy. Adherence to

ART requires patients to behave in a way that cannot easily be incorporated into daily life.

Studies indicate that more than 95% of the doses should be taken for optimal suppression. The lesser degree of adherence is more often associated with the virological failure. Poor adherence is linked with the likelihood of the drug resistance and direct treatment failure.

The Second-line ART is the next regimen used in sequence immediately after first-line therapy has failed (clinically, and/or immunologically and/or virologically). (National Guideline on ARV Therapy, 2005). Failure to first line ART is also a growing concern in Nepal with already 8 cases registered on the 2nd line ART (NCASC, 2009). The risk of transmission of resistant viruses and limited future treatment options due to poor adherence makes adherence a public health concern.

1.3 Rationale of the study

Sub optimal adherence directly relates to the increasing the likelihood of drug-resistance and contributing to direct treatment failure. The data explaining the adherence to ART to develop an understanding on its level and influencing factors is limited. Very little is known about the adherence to ART in Nepal although ART in Nepal started before five years.

Considering the topographical difficulties, socio economic barriers coupled with the vertical nature of the current service delivery system, it is important to know the rate of adherence on ART by the clients. The study aims at developing better understanding of the adherence rate to ART and its determinants in Nepal.

Topographical situation, poverty and economic migration are linked and they combine with other factors to increase the vulnerability. The expected results will provide evidence what to address and/or promote to scale up the adherence. The research finding is expected to contribute designed with better directed and more culturally sensitive interventions to optimize the adherence rate to ART in Nepal .This will serve as a resource for further research for developing new protocols for improvement in future.

1.4 Purpose of the Study

1.4.1 General objective

The general objective of the study was to determine the adherence to Anti-Retroviral Therapy (ART) among People Living with HIV and AIDS in Far West, Nepal.

1.4.2 Specific objectives

The specific objectives of the study were

- To determine the adherence rate to ART;
- To asses factors associated with adherence to ART; and
- To generate recommendations in the development of adherence optimizing interventions.

1.5 Research Questions

This study tried to address the following two research questions:

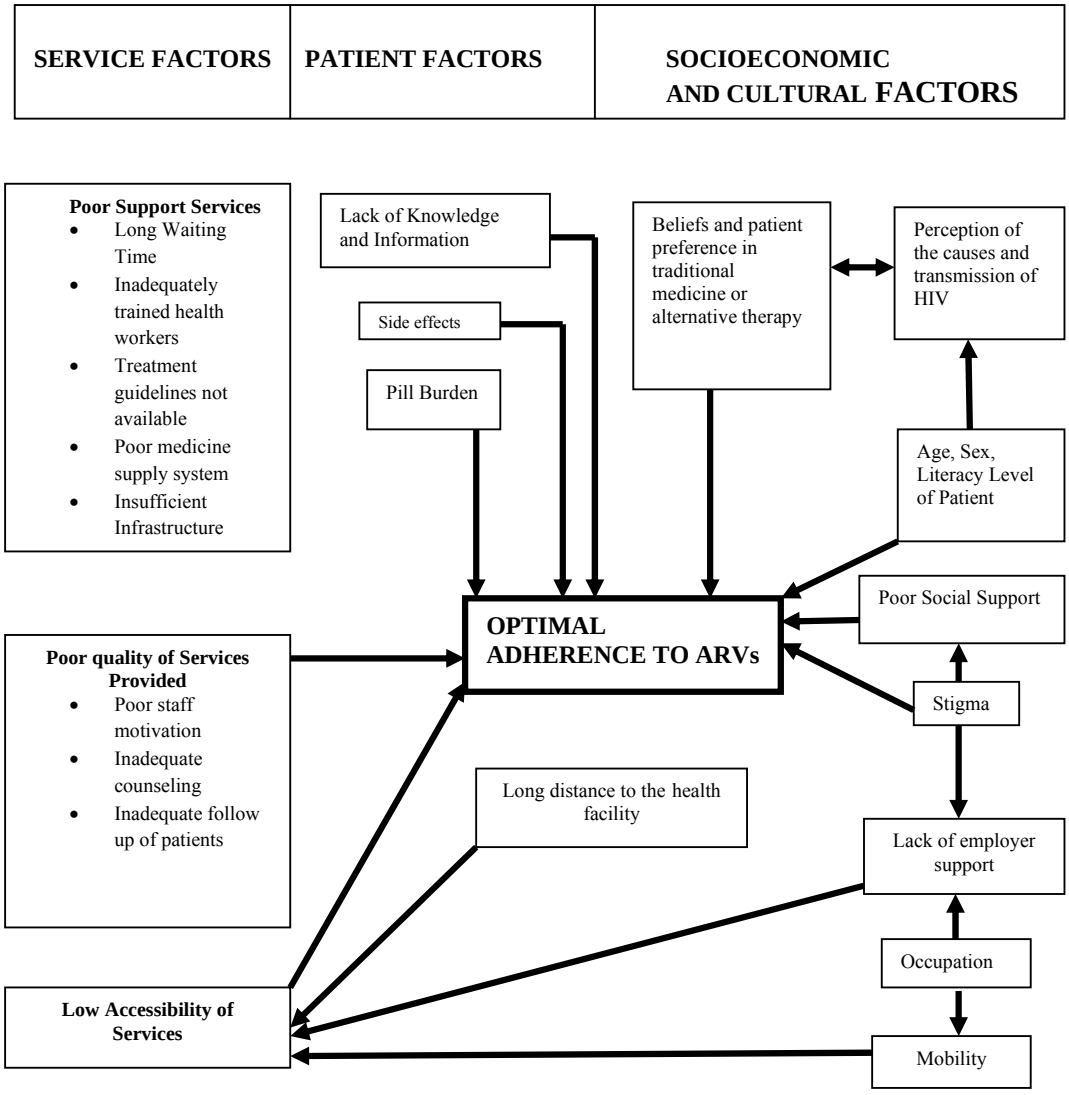
1. What was the rate of adherence to ART among PLHA in Far -West, Nepal?
2. What were the factors associated with adherence to ART among PLHA in Far -West, Nepal?

1.6 Conceptual framework

This Figure shows the adherence related factors which are linked for the adherence of the patient to the ART. It mainly focuses on the Service, Patient and socio economic and cultural factors.

Figure 1.6.1

Adopted from the studies in Botswana, Tanzania and Uganda



1.7 Operational definitions

Adherence: Person who does not miss more than three doses of treatment is considered Adherent and adherence rate was categorized as :

A - > 95% means < 3 doses missed in 30 days

B - 80 - 95% means 3-12 doses missed in a period for 30 days

C- < 80% means 12 doses missed in a period of 30 days

Here > 95% will be termed as adherent and < 95% will be non adherent.

Non Adherence: Person missing more than three doses of treatment is considered as non-adherent.

Knowledge: Knowledge was assessed in terms of: question on causation, prevention and duration of treatment were asked and scoring method was applied to determine if they possess the knowledge on HIV and AIDS.

Side effects: For the purposes of this study, medicine-related side-effects have been categorized according to patient/ARV user and biomedical perspectives. For example, diarrhea, nausea, vomiting, headache, hypersensitivity, anemia, neuropathy, pancreatitis, anorexia etc. The ART protocol will be used to standardize the effects.

Treatment costs:

Although ARVs are free of charge in Nepal, the treatment cost incurs with the cost of transportation, food, lodge and accompany. Also the time cost, as opportunity costs, lost by clients, systems and parties is included the cost calculation.

Patient satisfaction:

Respondents' satisfaction with the health care providers was measured in the survey by asking participants whether the way health care providers treated them was 'excellent', 'good', 'fair', or 'bad'. No test-retest estimates of this item were performed and are a weakness of the study. Responses to the level of satisfaction with the provider were dichotomized to excellent and good/fair/bad (less than excellent) because of the low number of respondents who reported fair and bad services.

CHAPTER II
LITERATURE REVIEW

This chapter tried to explore adherence to Anti-Retroviral Therapy and its associated factors raised by other studies from different places. This includes the magnitude of the problem and factors responsible for adherence. Findings of the different studies have been reviewed; the study design and methods adopted by the studies have not been analyzed since this is beyond the purpose of this literature review.

Methods of literature search

The literature search was started since the Starting of April, 2009. Basically, it was done by two ways. The first was the reviewing of printed materials, including journals, books and reports from the library of Resource Centre for Primary Health Care, National Health Research Council (NHRC) and National Centre for AIDS and STD Control (NCASC) Reports. The second approach was the Internet search. The electronic articles were reviewed through different search engine. 'Google', 'Pub Med' was the major search engines. It was carried out from April to September 2009. The key words used while making search were 'Adherence', 'HIV/AIDS', 'Adherence rate', 'Barriers', 'Facilitators', 'Far West' and 'Nepal'.

2.1 Anti-Retroviral Therapy

In South East Asia, estimated number of the people requiring ART is 1.1 million but the coverage of the ART is 14 percent only. In Nepal only 75 percent of the people are getting ART (Panos, 2006).

ART shortens illness duration, improves quality of life and survival of PLHA through reduction of viral load and increasing the level of CD4 cells (Hogan & Salomon, 2005).

2.2 Adherence

Drug resistance is not the only cause of treatment failure. The natural history of HIV infection is very unpredictable and people respond to treatment regimes in different

ways (O'Brien et al., 2000). Sub-optimal adherence itself is an important cause of failure. If people are sharing ARVs or interrupting their daily dosage regimes they simply do not get enough of the medicines for effective treatment and they will generate drug resistance. Inappropriate use of ARVs is a multifaceted problem increasing the likelihood of drug-resistance and contributing to direct treatment failure. Policies and programs that aim to provide increased or universal access to treatment face a key challenge: in order to succeed, these programs need to achieve an exceptionally high level of adherence for an indefinite period of time. An extensive review of interventions for improving adherence was undertaken by Haynes et al. in 2005.

Adherence is taking the correct dose of medications, on schedule, and following dietary instructions (Castro, 2005). Poor adherence is linked to the development of drug resistance, higher mortality rates, lower rates of increase in CD4 cell count, lower rates of undetectable viral load, lower therapeutic success and increased hospital days (Hogan & Salomon, 2005).

Mean 4 day adherence was 93 percent. Adherence was lower over longer periods of recall: 20 percent reported missed doses over the past 7 days; 33 percent reported ever missing a full day's medications and 16 percent had a treatment interruption of more than 7 days at least once (Sarna et al, 2008).

2.3 Importance of Adherence

Since 1996, an overwhelming amount of evidence from clinical trials has been published validating the use of ART for the treatment of AIDS. The biological and clinical goals of treatment have been defined as the suppression of viral replication, restoration of the immune response, a halt in the progression of disease, increased survival rates, reduced morbidity and a better quality of life. In countries where access to this level of care is available, AIDS-related mortality and morbidity have significantly declined (Pallela et al., 1998).

Maximum and sustainable suppression of HIV viral replication to below the level of detection is necessary to achieve these biological and clinical goals. To achieve

success requires near perfect adherence to combination ARV regimens. Adherence to an ARV treatment regimen involves taking all pills in the correctly prescribed doses, at the right time, and in the right way (Carter, 2005).

The best response to ART is seen when adherence is 100 percent. Levels of adherence below 95 percent have been associated with poor suppression of HIV viral load and a lower increase in CD4 count (Carter, 2005).

- If a patient is taking once-daily treatment, 95 percent adherence means missing no more than one dose a month.
- If a patient is taking treatment twice a day, 95 percent adherence means missing no more than three doses a month.
- If a patient is taking treatment three times a day, 95 percent adherence means missing no more than four doses a month.

Evidence suggests that greater than 95 percent adherence may be necessary to adequately suppress viral replication, produce a durable response and halt disease progression (Paterson et al., 1999). This means that missing more than one dose of a regimen per week may be enough to cause treatment failure. In addition to leading to disease progression this may result in the development and transmission of drug resistant viruses which cannot be treated with first line (lower cost) medicines. This will require treatment with second and/or third line medicines, which are more expensive, associated with many side effects and are complex to manage.

2.4 Measurement of Adherence

There is no gold standard by which to measure adherence to medication. Many studies employ a number of methods, either alone or in combination to measure adherence. The most common include: electronic drug monitoring (EDM) devices, pill counts, biochemical markers, pharmacy refill records and various self-reporting tools such as questionnaires and visual analogue.

According to Gill et al (2005), the hierarchy of adherence measures ranks physician and self-assessment report the least accurate, pill count intermediate and EDM the most accurate adherence marker.

Studies in African settings have indicated optimal adherence rates (i.e., the proportion of patients who adhered to their ART schedule at least 95 percent of the time) ranging from 54 percent to 98 percent depending on the measure used: Botswana (Weiser et al., 2003: 54 percent); Nigeria (Daniels, 2004: 79 percent); South Africa (Ferris et al., 2004: 77 percent; Darder et al., 2004: 80 percent); Uganda (Byakika-Tusiime, 2003: 67 percent; Munganzi, 2004: 98 percent); and Rwanda (Omes, 2004: 87 percent).

2.5 Adherence Rate

Adherence rates in the developing world appear to be high. Surveys in Botswana, Senegal and South Africa show that people living with HIV/AIDS take their medicine regularly about 90 percent of the time. High adherence leads to high survival rates – people live longer.

Studies have shown survival rates of between 80 and 90 percent among people who have taken ARVs for at least a year, compared to 50 percent of those with no access to ARVs. Studies in Haiti have showed 87 per cent survival rates for adults and 98 per cent for children, with adherence rates of 96 per cent (Panos, 2006).

Low adherence had been reported to reach up to 48 percent in some studies (Holmes et al., 2007); others reported an adherence rate of 74.3 percent (Diabate et al., 2007).

The general recommendation is to use a minimum of three antiretroviral drugs. If one drug is taken on its own, it has been found that, over a period of time, the drug stops working. HIV reacts to the drug in the person's body and changes, so that the virus is no longer affected by the drug. The virus then starts to reproduce itself the same way as before. If two or more antiretroviral drugs are taken together it vastly reduces the rate at which resistance develops (NCASC, 2005).

2.6 Associated Factors

2.6.1 Demographic and socioeconomic factors

Although the literature consistently demonstrates that demographic characteristics are not strong predictors of adherence, some correlates of adherence are described below together with socioeconomic factors.

2.6.1.1 Age

Age may influence adherence. Studies have found that, with the exception of the most elderly, adherence increases with age. In two studies associated with ART adherence, sub-optimal adherence showed a positive correlation with being younger (Jones et al., 1999).

2.6.1.2 Level of education

A lower level of general education and poorer literacy may impact negatively on some patients' ability to adhere, while a higher level of education has a positive impact (Catz et al., 1999).

2.6.1.3 Financial constraints

Studies conducted in Africa reveal that the cost of medication is one of the most significant barriers to treatment adherence. In Botswana, Weiser et al. (2003) report adherence difficulties related to the financial demands of therapy and an inability to afford medicines for varying periods. They note that 70 percent of patients claimed that the cost of ARVs posed a problem for them, and 44 percent of patients believed that the cost impeded their ability to adhere to treatment. Similarly, over one-half of health care providers (56%) believed that financial problems often or always impeded adherence to ART. The extent to which financial difficulties played a key role in sub-optimal adherence is also reported in study findings in Uganda for patients receiving nonsubsidized therapy (Byakika-Tusiime et al., 2003). Medications and clinic visits cost money and may stretch an already meager budget. In resource-poor countries many people live below the poverty line and there is often no medical insurance or disability pension for people living with HIV (Katabira, 2002).

2.6.1.4 Social support

Living alone and a lack of support have been associated with an increase in suboptimal adherence (Williams & Friedland, 1997), and social isolation is predictive of sub-optimal adherence. Not living alone, having a partner, social or family support, peer interaction, and better physical interactions and relationships are characteristics of, patients who achieve optimal adherence (Motashari et al., 1998).

2.7 Impact of the drug regimen on adherence

Almost all of those who are currently on ART are on a regimen of three or more ARVs (Grierson et al., 2000). The likelihood of a patient's adherence to a given regimen declines with poly pharmacy, the frequency of dosing, the frequency and severity of side-effects, and the complexity of the regimen (Williams & Friedland, 1997).

Drug hypersensitivity is common in patients with HIV and regimen associated toxicity is a common predictor of, and reason for sub optimal adherence, which has been identified across many studies. Side effects associated with each individual ARV medicine have been well documented and, while not universal for every patient, can be predicted. Although these side effects usually subside after the first few weeks of therapy, for some people they persist. The anticipation and fear of side effects also have an impact on adherence. Poor adherence has also been associated with patients desire to avoid embarrassing side effects (like sweating) in certain situations such as on a date or at a job interview (Burgos et al., 1998).

Psychological factors, including mental health problems such as depression, have been associated with low adherence in HIV infected adults and adolescents, as have other psychological variables such as perception of one's ability to follow a medication regimen, or self efficacy (Singh et al., 1996; Murphy et al., 2001; Eldred et al., 1998; Tuldra et al., 2000). Beliefs about health and illness, in particular about the necessity of medication to ward off illness and concerns about potential adverse events, have been found to be influential in both HIV and other disease areas (Horne et al., 2001 and 2002).

The most common side effects are nausea and feeling tired. Side-effects are often referred to by the grade of the effect, and the grades range from mild to moderate to severe to life-threatening. For example, it is considered a mild side effect if a person has 2-3 vomiting episodes a day. Life-threatening side effects such as extreme limitations in daily activity and hospitalization are rare, but are still threats to some (NCASC, 2005).

2.8 Adherence optimizing interventions

In order to support ARV users, more staff should be trained specifically in counseling. This would help ensure that nurses do not have to double up as counselors and enable adherence counseling to be scaled up countrywide. This would help in delivering quality adherence counseling and may also contribute to efforts to reduce the long waiting times (Nakiyemba, 2006).

Early diagnosis and management of depression need special focus (Sarna, 2008).

Based on the results we recommend that efforts be made to make the service accessible by commencement of ART service in more health centers to increase patients' awareness of the adverse effects of ARV and manage them and to provide social support to all PLHA and particularly to those caring for children (Markos et al., 2008).

It is important for clinicians and policy makers to identify factors that influence health related quality of life (Yadav, 2008).

CHAPTER III

METHODOLOGY

This chapter presents the methodology adopted to investigate the adherence to ART. It talks about study site, study subjects and its size, techniques and tools administered for documenting information and data management and analysis.

3.1 Study design

Cross sectional study design was used which included both quantitative and qualitative methods to investigate the facilitators and constraints to adherence to ART among HIV infected persons.

3.2 Study area and period of data collection

The study was conducted in Far West of Nepal from April to September 2009 for a period of six months.

3.3 Study population

Clients on ART in Far West of Nepal were the study participants. Clients of age 15 years above, willing to participate in the study were enrolled in the study.

3.4 Exclusion criteria

- Children below 15 years on ART.
- For less than 3 months on ART.

3.5 Sampling

3.5.1 Sampling technique

Random sampling technique among the client visiting the ART centre was employed. Sample was selected randomly according to the natural inflow of patient.

3.5.2 Sample size estimation

The sample was determined using following formula by Kothari, 2003.

For finite population in 95% CI, with the allowable error of 5 %. The following formula was used for estimation of sample size.

$n = Z^2 pqN / \alpha^2(N-1) + Z^2 pq$

The estimated total number of sample size in the study = 176

Where:

N = 565

n = calculated sample size

$Z\alpha = 1.96$ ($\alpha = 0.05$)

p = 0.2

q = 1- p=1 – 0.21 = 0. 79

d = error allowance = 0.05

A total of 176 clients who have completed 3 months of treatment were enrolled in the study from following ART sites, which is divided as per the proportion:

- Seti Zonal Hospital 106
- Mahakali Zonal Hospital 9
- Achham District Hospital 28
- Doti District Hospital 33

3.6 Techniques and Tools of data collection

Both quantitative and qualitative techniques of data collection tools were applied in the study. For quantitative data, clients' record at ART sites was reviewed and recorded for the necessary information about the demographic profile of the client, disease phase, ART use and duration on ART in the data record sheet. Qualitative data were obtained by using In-depth interview.

Instrumentation of research tools

The clients' record sheet to be administered at ART sites was prepared as per the data need and available in the patients' registers. These sheets were also consulted with the ART providers at the Teku Hospital, Kathmandu and pre-tested with 10% of the sample size in the ART centre at Teku Hospital, Kathmandu.

Semi-structured guidelines are prepared by taking reference from the challenges to ART (WHO, 2006a) study conducted in Botswana, Tanzania and Uganda to

understand access to adherence. These were further consulted with national focal person and pre-tested among the ART clients in Kathmandu and finally, adopted in the study**.**

Observation

While discussions was going on it was possible to observe both the respondents and also others who were not included in the sample, aspects such as interactions between clients and service providers in health facilities, stigmatized actions, time spent at the facility and the organization procedure.

3.7 Study variables

1. Socio Demographic Variables

- Gender
- Age
- Caste
- Marital status
- Educational status
- Area of residence
- Economic status
- Employment

2. Patients' Knowledge and Belief Factors

- Knowledge on the causation of AIDS and ART therapy
- Knowledge on the treatment period
- Side effects
- Perceived benefits on ART

3. Health service Facility

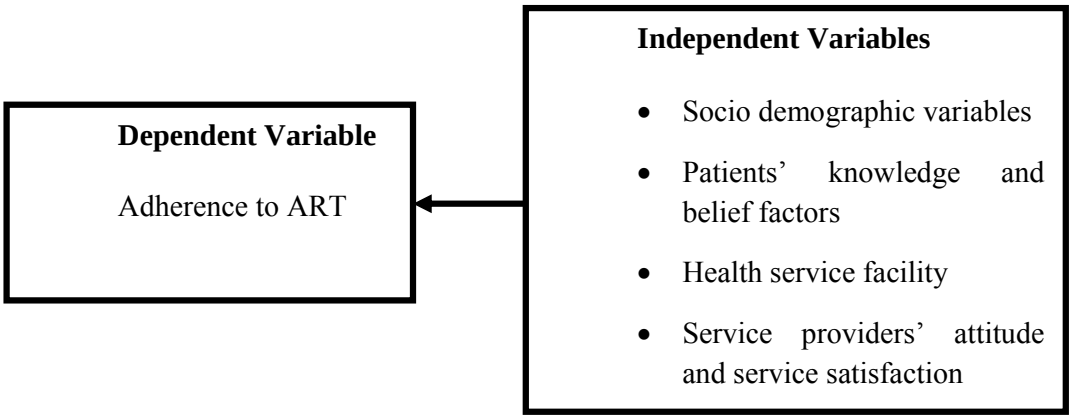
- Distance
- Time to reach ART centre
- Cost per each visit

4. Service providers' attitude and service satisfaction

- Provision of adequate information
- Patients satisfaction with the service provided
- Waiting time

Figure 3.7.1

Variables of the study



3.8 Validity and Reliability

3.8.1 Validity

The question schedule was adapted from previous studies and modified as per Nepalese setting. The questions were asked in local language. The Face validity was checked during the pretest.

To develop research instrument, related literatures were reviewed and conceptual framework was developed accordingly.

3.8.2 Reliability

The question schedule was pre tested in 10 percent of the total samples among study participants in Kathmandu district.

3.9 Data management and analysis

After collecting data from field, data was checked and rechecked immediately to correct possible errors. Tally sheet was prepared manually. The data was processed using the SPSS (Version 17.0).

The data analysis was done by using a descriptive statistical analysis, including frequencies, proportions, means and standard deviation.

In order to determine the relationship between independent and dependent variables, the Odds ratio and Chi-square test was used. The qualitative data collected were analyzed with a view to gaining understanding of the factors that influenced adherence to ART.

3.10 Ethical consideration

Verbal informed consent was taken from each research subjects before data collection. For this, before obtaining the informed consent from the research subjects, an information sheet comprising of at least purpose of the study, potential risks and benefits of participating, procedure of maintaining confidentiality, and right to not to participate in this study, were provided to the research subject.

This informed consent had followed the ethical norms and values as stated in the National Ethical Guidelines for Health Research in Nepal, 2001. The ethical approval was obtained from the Institutional Review Board (IRB) of Faculty of Medical Sciences, Nobel College, Pokhara University.

3.11 Possible errors and biases

Those who were found at the treatment centre are taken as the sample hence it may lead to selection bias because those not found at the centre were missed. To limit this bias home visit was carried out with the help of the Community and Home Based Care Workers.

Recall Bias may exist since the study is based on the self-report of the client, so, to minimize this bias the answers were reconfirmed by asking the question more than once, providing them enough time to remember events and other supporting information was also assessed to validate the answers. Local language was used to avoid the potential bias of misinterpretation of the questions.

3.12 Limitations

The result of the study may not be generalized to the other parts of the country.

It was limited by its cross-sectional design, i.e. association could not be interpreted as causal. The cross-sectional design give snapshot only, so time sequence may not be calculated for the study.

CHAPTER IV

RESULTS

4.1 Response

A total of one hundred and seventy six (176) patients consented and participated in the study, out of which 156 records (n=156) were analyzed. Twenty records were excluded for incompleteness. This represents a response rate of 88.6 % of the number of patients eligible for the study. Among the 20 patients who did not participate in the study, 8 declined on confidential grounds, 6 did not give any reasons, and 6 did not done have initial CD4 counts.

4.2 Demographic characteristics of ARV users

The study was conducted at Seti Zonal Hospital, Mahakali Zonal Hospital (Terai), Achham District Hospital and Doti District Hospital (Hilly). Demographic data and patient characteristics are summarized in Table 4.2.1. A total of 156 participants from four study sites participated in this study. Of these, 100 (64.1%) were from Seti zonal Hospital, 7 (4.5%) from Mahakali Zonal Hospital, 24 (15.4%) from Achham District Hospital and 25 (16%) from Doti District Hospital. A total of 73 males and 83 females participated in the study. The mean age was years 36.97 with the minimum 24 and maximum 62 with the Standard deviation of 7.66.

Table 4.2.1
Socio demographic characteristics of ARV users

Category	Hilly(n=49) n(%)	Terai(n=107) n (%)
Gender		
Male	21 (28.4)	52 (71.6)
Female	28 (34.1)	55 (65.9)
Age(Years)		
<=30	21 (55.3)	17 (44.7)
31-49	25 (16.7)	83 (83.3)
>=50	3 (30.0)	7 (70.0)
Ethnicity		
Brahmin	6 (28.6)	15 (71.4)
Chhetri	17 (30.4)	39 (69.6)
Dalit	20 (29.0)	49 (71.0)
Janajati	6 (60.0)	4 (40.0)
Religion		
Hindu	49 (32.2)	103 (67.8)
Muslim/Christian	0 (0)	4 (100.0)

Marital Status		
Married	22 (25.3)	65 (74.7)
Unmarried	2 (50.0)	2 (50.0)
Separate	1 (33.3)	2 (66.7)
Widowed	24 (38.7)	38 (61.3)
Educational Status		
Illiterate	23 (30.7)	52 (69.3)
Can read and write	8 (23.5)	26 (76.5)
Primary	3(27.3)	8(72.7)
Lower Secondary	5(31.3)	11 (68.8)
Secondary	7 (50.0)	7 (50.0)
Higher Secondary +	3 (50.0)	3 (50.0)
Family Type		
Joint	15 (37.5)	25 (62.5)
Nuclear	29 (26.9)	79 (73.1)
Live alone	5 (62.5)	3 (37.5)
Family Income Source		
Agriculture	32 (34.0)	62 (66.0)
Service	73 (6.8)	12 (63.2)
Business	1 (25.0)	3 (75.0)
Labor	6 (18.2)	27 (81.8)
Others	3 (50.0)	3 (50.0)
Time since HIV diagnosis(months)		
<=12	14 (37.8)	23 (62.2)
13-48	29 (29.9)	68 (70.1)
>=48	6 (27.3)	16 (72.7)
Time since starting ART(months)		
<=12	27 (36.0)	48 (64.0)
13-48	22 (28.6)	55 (71.4)
>=48	0 (0)	4 (100.0)
CD4 at start of the ART		
<=200	38 (36.9)	65 (63.1)
>200	11 (20.8)	42 (79.2)

4.3 Adherence rate

Table 4.3.1

Adherence rate of the last month

Adherence rate	Frequency	Percent
>95%	131	84.0
80-95%	14	9.0
<80%	11	7.0

It was found that out of 156 participants, 84 percent of the participants had more than 95 percent adherence and 16 percent respondents were less than the optimum adherence (i.e. 14 for 80-95% and 11 for < 80%), accounting for the 84 percent adherence rate within the last month.

Table 4.3.2

Adherence to treatment

Variables	Yes	Percent	No	Percent
Delay more than 1 hour	27	17.3	129	82.7
Missed to take drug last week	4	2.6	152	97.4
Missed to take drug last month	32	20.5	124	79.5

It was found that 17.3 percent of the total respondent delayed more than 1 hour to take the pills and 2.6 percent i.e. 4 people were found to have missed to take the drugs during the last week with adherence rate 97.4 percent . A total of 32 respondents were found to have missed to take at least single pill within the last month.

Table 4.3.3

Adherence rate and area of residence

Variables	Residence				Odds ratio (95% CI)	P-Value
	Hilly		Terai			
Adherence rate	n	%	n	%		
>95%	36	27.5	95	72.5	0.51 (0.15-1.78)	0.23
80-95%	6	42.9	8	57.1	0.43 (0.06-2.84)	0.30
<80%	7	63.6	4	36.4	1	

Clients residing in the Terai area are more adherent i.e. 72.5 percent of people living in the Terai are adherent whereas only 27.5 percent of the client in the Hilly area are adherent.

Table 4.3.4

Adherence rate and Gender

Variables	Gender				Odds ratio (95% CI)	P-Value
	Female		Male			
Adherence rate	**n**	**%**	**n**	**%**		
>95%	68	51.9	63	48.1	0.62 (0.14-2.50)	0.45
80-95%	7	50.0	7	50.0	0.57 (0.08-3.78)	0.49
<80%	7	63.6	4	36.4	1	

Among those were more than 95 percent adherent, 51.9 percent are females and 48.1 percent are males. There was no significant association between the gender and adherence (P=0.45).

Table 4 .3.5

Barriers for the adherence (n=25)

Barriers	**Responses**
	Percentage
Distance	10.0
Traveling away from home	7.5
Religious beliefs	5.0
Transportation problems getting to the clinic	5.0
Lost or stolen pills	2.5
Forgot	10.0
Depressed or overwhelmed	5.0
Lack of watch	7.5
Busy in work	20.0
Lack of travel cost	10.0
Lack of knowledge of ART	17.5
Total	**100**

A total of 25/156 clients reported of missing more than 3 pills during the last months. Among those 25 clients, 20 percent of the client reported of being busy at work, 10 percent reported of missing the drugs due to long distance to collect the drugs,10 percent cited that they lack the travel cost so could not collect the drugs, 10 percent

reported of skipping the drugs due to forgetting to take the pills, 10 percent did not have the knowledge on the importance of ART, 7.5 percent missed the pills because they had to travel away from the home, 2.5 percent reported of stolen pills. Lack of watch was another reason for missing the drugs.

Table 4.3.6

Other medications than ART

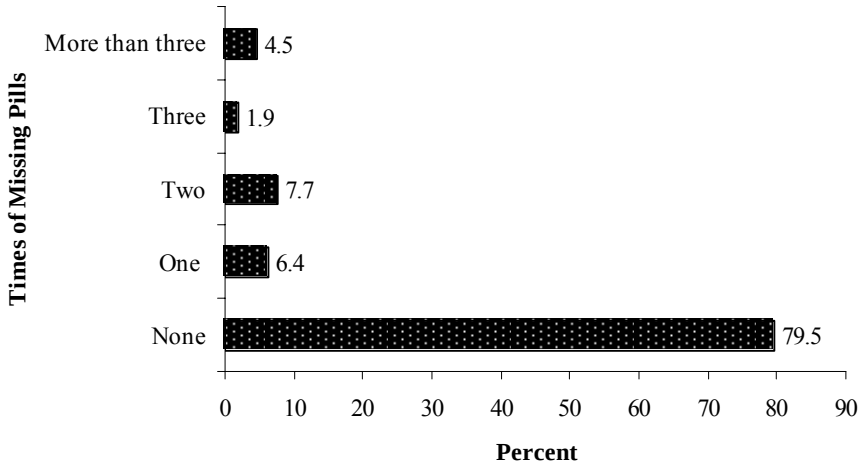
Variables	Adherent		Non Adherent		Odds ratio (95% CI)	P-Value
Other medications	**n**	**%**	**n**	**%**		
No	122	93.1	22	88.0	1.85 (0.36-8.35)	
Yes*	9	6.9	3	12.0	1	0.38

*It includes Medicines from Retail pharmacy, Hospital medicines and Herbs.

Those who were not taking other medications than the ART were more adherent than the person with other medications which is not statistically significant (P>0.05).

Figure 4.3.7

Frequency of missing pills



Regarding the Frequency of missing the pills, 79.5 percent responded that they have never missed the pills during the last month, whereas 6.4 percent had missed the pills one time, 7.7 percent for 2 times, 1.9 percent for 3 times and 4.5 percent for more than 3 times.

4.4 Adherence and socio demographic characteristics of the ARV users

Table 4.4.1

Adherence and socio demographic characteristics of the ARV users

Variables	Adherent		Non Adherent		Odds ratio (95% CI)	P-value*
	n	%	n	%		
Gender						
Male	63	48.1	11	44.0	1.18 (0.46-3.03)	0.71
Female	68	51.9	14	56.0	1	
Age(Years)#						
> 35	76	58.0	11	44.0	1.76 (0.69-4.54)	0.20
<= 35	55	42.0	14	56.0	1	
Residence						
Terai	95	72.5	12	48.0	**2.86 (1.10-7.47)**	**0.01**
Hilly	36	27.5	13	52.0	**1**	
Marital Status						
Ever married	129	98.5	23	92.0	5.61 (0.53-69.61)	
Unmarried	2	1.5	2	8.0	1	0.06
Religion						
Hindu	129	98.5	23	92.0	5.61 (0.75-41.84)	0.12
Others	2	1.5	2	8.0	1	
Caste						
Advantaged	65	49.6	12	48.0	1.07 (0.45-2.51)	0.88
Disadvantaged	66	50.4	13	52.0	1	
Education status						
Literate	70	53.4	11	44.0	1.46 (0.57-3.76)	0.39
Illiterate	61	46.6	14	56.0	1	
Type of Family						
Single	100	76.3	16	64.0	1.81 (0.66-4.91)	0.20
Joint	31	23.7	9	36.0	1	
Employment Status						
Employed	25	19.0	11	44.0	0.30 (0.11-0.81)	0.07
Unemployed	106	81.0	14	56 .0	1	

Source of Income						
Service	25	19.0	11	44.0	0.30 (0.11-0.81)	0.07
Agriculture	106	81.0	14	56 .0	1	
Total Client Income(NRs)#						
>2000	49	37.4	11	44.0	0.76 (0.30-1.97)	0.53
<=2000	82	62.6	14	56.0	1	
Total Family Income(NRs)#						
>2000	54	41.2	11	44.0	0.89 (0.35-2.30)	0.80
<=2000	77	58.8	14	56.0	1	

*chi-square was applied
classified according to median values

Descriptive analysis revealed that gender was not significantly associated with the reported adherence status (P=0.71). Around 58 percent of the respondents in the adherent group are above the age of 35 and above and 42 percent of the respondents who are adherent to the treatment are below the age of 35. However the significant association was not seen between the gender and adherence rate. Patients residing in the Terai area are more than thrice likely to report adherence than the Client residing at the hilly area (OR=2.86, P=0.01).

Clients who were married were not different in their reported adherence with those who were never married (P=0.61). Regarding the modes of transmission, women who were infected from their husband ad slightly higher adherence rate than that of the migrant worker, however there was significant association (P=0.76). Among the adherent group, 98.5 percent belong to the Chhetri community and 2 percent were from other religion. For the analysis, Brahmins, Chettri were placed in the advantaged group and other caste were placed in the disadvantaged group, however there was no difference in the reported adherence between these two groups. The Clients who were literate were more adherent to the regimen than the illiterate clients with 53 percent and 47 percent respectively. There was no significant association between the education status and adherence.

Around 76 percent of the client reporting higher adherence belongs to the single family and only 24 percent of the client reporting adherent belonged to joint family.

Employment status does not seem to affect the reported adherence, total of 106 out of 130 unemployed client are adherent to the treatment and 25 out of 36 employed clients are adherent to the treatment. A total of 25/36 clients with service as regular source of income are adherent to the treatment and 106/120 client with agriculture as a regular source of income are adherent to the treatment.

Clients having income more than NRs.2000 per month are not different in their reported adherence status with that of he client with income less than NRs.2000 per month (P=0.56). Similarly, the total family income also do not seem to influence the reported adherence status (P=0.80).

Table 4.4.2

Personal Habits

Variables	Adherent		Non Adherent		Odds ratio (95%CI)	P-value*
	n	%	n	%		
Personal Habits						
Prior Alcohol						
No	114	87.0	15	60.0	**4.5 (1.547-12.79)**	
Yes	17	13.0	10	40.0	**1**	**0.001**
Prior Smoking						
No	87	33.6	9	64.0	**3.5 (1.33-9.45)**	
Yes	44	66.4	16	36.0	**1**	**0.004**
Current Alcohol						
No	117	89.3	21	84.0	1.6 (0.40-5.91)	
Yes	14	10.7	4	16.0	1	0.446
Current Smoking						
No	109	83.2	23	92.0	0.43 (0.95-1.962)	
Yes	22	16.8	2	8.0	1	0.213

*chi-square test

Personal Habits such as the prior and current alcohol intake, prior and current smoking habit were analyzed to determine the factors related to adherence to Antiretroviral Therapy. Clients reported of prior alcohol habit were around 4.5 times less likely to adhere to the antiretroviral therapy. Significant association was observed between the Prior alcohol habit and reported adherence rate (OR=4.5, P=0.001). Similarly the prior

smoking habit was found to be significantly associated with the reported adherence (OR=3.5, P=0.004). There was no significant association was observed between the current alcohol and habit and adherence o the treatment (P=0.446). Similarly, there was no significant association between the current smoking habit and adherence rate (P=0.213).

Table 4.4.3

Treatment related factors

Variables*	**Adherent**		**Non Adherent**		**Odds ratio (95%CI)**	**P-Value***
	n	**%**	**n**	**%**		
Infected (Years)#						
<= 2	78	59.5	9	36.0	**2.62 (1.08-6.36)**	**0.030**
> 2	53	40.5	16	64.0	**1**	
Started (Years)#						
<= 1	68	51.9	7	28.0	**2.77 (1.09-7.09)**	**0.020**
>1	63	48.1	18	72.0	**1**	
CD4 (At start)#						
<=150	59	45.0	7	28.0	2.11 (0.82-5.39)	0.114
>150	72	55.0	18	72.0	1	
Side effects						
No	60	45.8	7	8.0	2.71 (0.85-5.55)	0.099
Yes	71	54.2	18	72.0	1	

#classified according to median values
*chi-Square test

Various treatment related factors such as the duration of infection, duration on ART, baseline CD4 count and experience of side effects were assessed as the treatment related factor for the adherence. Around 79/87, 89.66 percent of the client who have been infected for 2 or less than 2 years were adherent to the treatment whereas, 53/68, 76 percent of clients who have been infected for more than 2 years were found to have reported adherent.

There were nearly three times more likely to be adhere between the duration of infection more than 2 years and reported adherence rate (OR=2.62, P=0.03).Similarly, duration on ART for more than 1 year were significantly associated with the non-adherence (OR=2.11, P=0.028). Base line CD4 count did not significantly influence the adherence status (P=0.114).

A total of 89 clients were reported to have experienced one or more forms of side effects. Clients who experience the side- effects (72%) are found to be more non-adherent than those clients who did not experience any form of side effects (8%).The relation observed was non-significant (P=0.99).

Table 4.4.4

Side effects (n=89)

Side Effects	**Percent**
Fatigue	8.6
Vomiting	7.9
Diarrhea	4.5
Anemia	4.1
Dizziness	14.2
Headache	14.2
Arthritis	10.5
Skin rashes	9.4
Nausea	6.7
Confusion	4.1
Insomnia	0.4
Fever	7.1
Others*	8.2
Total	**100**

Multiple response analysis was done

*Others side effects include sleeping disorders, loss of appetite and hearing loss.

Among the clients who experienced the side effects, majority (14.2%) of the clients reported of dizziness and headache. Similarly, 10.5 percent reported of arthritis and around 4.5 percent reporting diarrhea and another 4.1 percent reporting of anemia.

Table 4.4.5

Counseling of adherence

Variables	Adherent		Non Adherent		Odds ratio (95% CI)	P-Value
Counseling	**n**	**%**	**n**	**%**		
Yes	128	97.7	24	96.0	1.12 (0.63-1.99)	0.620
No	3	2.3	1	4.0	1	

Among the 156 respondents, 152 reported of receiving the counseling on the ART and 4 responded of not receiving the counseling on the ART. Although, 152 received counseling, 16 percent of those counseled were reported of not adhering to the treatment despite the adherence counseling.

4.5 Patients' knowledge and belief factors

Table 4.5.1

Knowledge on the causation of AIDS and ART therapy

Knowledge of	Adherent		Non Adherent		Odds ratio (95% CI)	P-Value
HIV /AIDS	**n**	**%**	**n**	**%**		
Yes	126	96.2	22	88.0	3.44 (0.60-18.30)	
No	5	13.8	3	12.0	1	0.118
ARV						
Yes	127	97.0	24	96.0	1.05 (0.67-1.64)	
No	4	3.0	1	4.0	1	0.588
Treatment period						
No	44	33.6	4	16.0	2.66 (0.86-8.21)	0.081
Yes	87	66.4	21	84.0	1	

Regarding the knowledge of HIV and AIDS, various questions were asked to assess the client knowledge on HIV and AIDS. Question on causation, prevention and duration of treatment were asked to assess the knowledge and scoring method was applied to determine if they possess the knowledge on HIV and AIDS. A total of 148/156 possessed knowledge on HIV and AIDS whereas 8/156 had no knowledge on HIV and AIDS. Out of 148 people with knowledge, 22 clients (15%) were non-adherent whereas,

38 percent of those lacking knowledge on HIV were non-adherent to ARV there was no significant association was seen between the client knowledge and reported adherence (P=0.118). Similarly, there was no significant association between the clients knowledge on ARV and adherence status.

A total of 48 clients did not know about the duration of ART. Around 20 percent of the client (21/108) who had knowledge on duration of ART were reported of missing more than 3 pills and were non-adherent.

Table 4.5.2

Perceived benefits on ART

Variables	**Adherent**		**Non Adherent**		**Odds ratio (95% CI)**	**P-Value**
Perceived benefits on ART	**n**	**%**	**n**	**%**		
Yes	119	90.8	8	32.0	**21.07 (6.79-68.04)**	
No	12	9.2	17	68.0	**1**	**0.000**

Regarding the perceived benefits of ART to the Client, 119/151, 79 percent were reported of adhering to the treatment. Clients who perceived that ART will benefit them were 21 times more likely to adhere to the treatment than those who perceive hat ART will do no-good to them (OR=21.07, P<0.05).

Table 4.5.3

Disclosure of status

Variables	**Adherent**		**Non Adherent**		**Odds ratio (95% CI)**	**P-Value**
Disclosure of Status	**n**	**%**	**n**	**%**		
Yes	117	89.3	18	72.0	**3.25 (1.02-10.19)**	
No	14	10.7	7	28.0	**1**	**0.029**

Table 4.5.4

Person to whom status is disclosed

Disclosed to	Frequency	Percent
Friends only	2	1.5
Family Members only	2	1.5
Health workers only	2	1.5
Friends and family members	2	1.5
Family members and health workers	17	12.6
All above	110	81.5
Total	**135**	**100**

Participants were asked if they had disclosed their HIV status to any other person. Out of 156 respondents, 135 (87%) clients responded of disclosing their status to any of the people i.e. family members, friends, health workers or all of them. Among the clients reported of disclosing their disclosure status, more than 80 percent had disclosed their status to friend, family members, and health workers. Around 12 percent have disclosed to family and health workers only and 1.5 percent had disclosed to their friends only and another 1.5 percent disclosed to their family members only.

A significant association was seen between the adherence and disclosure statuses, disclosed people thrice likely to adhere to the treatment than that of non- disclosed (P=0.029).

Table 4.5.5

Stigma and discrimination

Variables	Adherent		Non Adherent		Odds ratio (95% CI)	P-Value
Stigma and discrimination	**n**	**percent**	**n**	**percent**		
No	105	80.2	17	68.0	1.90 (0.74-4.88)	0.177
Yes	26	19.8	8	32.0	1	

Table 4.5.6

Source of stigma

Source of stigma	Frequency	Percent
Family	6	16.7
At employment	1	2.9
Friends	2	5.9
Society	25	73.5
Total	**34**	**100.0**

Question was asked if they had experienced of being treated indifferently because of their HIV status, 122/156 (78%) replied that they did not experience of being treated indifferently due to their HIV status, whereas 34/156 (21.79%) reported of experiencing some form of stigma and discrimination.

Among those reporting of experience indifferent behavior, majority (73.5%) reported of being stigmatized by society, 16.7 percent reported of being stigmatized by family members, 2.9 percent reported of being stigmatized at workplace and 5.9 percent reported of being stigmatized by friends. No significant association was observed between the stigma and adherence to the treatment (P>0.05).

4.6 Health service facility

Table 4.6.1

Health service facility and adherence

Variables	Adherent		Non Adherent		Odds ratio (95% CI)	P-Value
Convenience to reach	**n**	**%**	**n**	**%**		
No	43	32.8	8	32.0	1.04 (0.38-2.87)	
Yes	88	68.2	17	68.0	1	0.94
Means						
By vehicle	124	94.7	22	88.0	2.42 (0.58-10.06	0.213
By foot	7	5.3	3	12.0	1	
Time						
<=1 hour	42	32.1	7	28.0	1.21 (0.43-3.49)	
>1 hour	89	67.9	18	72.0	1	0.689

/Travel Cost per visit (2 way)#						
<=NRs 150	116	84.6	11	44.0	**9.84 (3.44-28.73)**	**0.000**
>NRs 150	15	15.4	14	56.0	**1**	

#classified according to median values

The respondent were asked if it was convenient for them to reach the health facility, 105, 67.31 percent client reported that it was convenient for them to reach the health facility. Almost 1 in 2 clients find it difficult to reach the health facility. Around 2 in 3 clients had to travel more than 1 hour to reach the health facility. However, no significant association was observed between adherence and the travelling time (P=0.689). Regarding the service facility, a significant association was observed between the travel cost per visit and the adherence rate (OR=9.84, P=0.000). Those clients who had to pay less than NRs.150 per visit were around 10 times more likely to adhere to the treatment therapy than those who had to pay more than NRs.150 per visit.

4.7 Relationship among adherence and service providers' attitude and satisfaction

Table 4.7.1

Adherence and service providers' attitude and satisfaction

Variables	**Adherent**		**Non Adherent**		**Odds ratio (95%CI)**	**P-Value**
	n	**%**	**n**	**%**		
Patient satisfaction*						
Excellent	121	92.4	12	48.0	**13.11 (4.75-36.19)**	**0.000**
Good/fair/Poor (Not Excellent)	10	7.6	13	52.0	**1**	
Waiting Time#						
>1 hour	51	38.9	8	32.0	1.35 (0.50-3.72)	
<=1 hour	80	61.1	17	68.0	1	0.513
Perception on waiting time						
Not Reasonable	71	54.8	10	40.0	1.77 (0.69-4.63)	
Reasonable	60	45.8	15	60.0	1	0.193

*mentioned in operation definition
#classified according to median values

Patients were asked to respond on five health facility related statements to assess the level of patient satisfaction regarding the service at the Health Facility and categorized into excellent, good, fair and poor (Not excellent). Around 85 percent of the client found the service provided excellent (Yes to more than 5 health facility related statements), whereas 15 percent responded that the service was Not excellent. The patients who are very satisfied with the services were 13.11 times more likely to adhere to the ART. A significant association was observed between the adherence and patient satisfaction (OR=13.11, P<0.0.5).

No significant association was observed between adherence and the waiting time. (P=0.513).

4.8 Facilitators for the good adherence in last month

Table 4.8.1

Facilitators (n=124)

Facilitators	**Responses**	
		Percent
	Friends	4.65
	Family	27.44
	Mobile	2.79
	Calendar	0.47
	Watch	52.09
	TV/Radio	4.19
	CHBC Workers	8.37
Total		**100**

Multiple response analysis was done

Among the 124 clients who never missed to take the pills, around 52 percent of the respondents reported that watch was the major facilitator for the adherence. Other electronic devices such as mobiles were used to remind them of pills intake by 2 percent of the clients.

Around 8.37 percent of the clients reported that Community and Home Based Care Workers helped them to take the drugs regularly. Similarly, 27.44 percent responded that family helped them to take the pills regularly.

4.9 Qualitative results

Short Case Study from Far-West regarding "Adherence to ART"

Case I: Mrs. Manamaya (Name Changed) is 30 years old and widowed and is local resident of the Far West and belong to the Dalit Community. She is illiterate and dependent on agriculture for the income. She lives with a son and a daughter, both infected with HIV and AIDS but they are not in ART. She acquired the infection from her husband who was a migrant worker. She knew about the HIV infection only after the death of her husband. After years of her husband death, she was diagnosed with HIV infection only when she fall ill .When her family came to know about her HIV Status, her Mother-in law (Sasu) , Father in Laws (Sasura) did not allow her to live with them.

She has been taking ART from the Seti Zonal Hospital which is around 15 km away from her home and have to pay NRs.100 per visit. She, being the only earning member for her 3 members family, all infected with HIV, she finds it very difficult to adhere to the treatment Therapy. With very limited income from agriculture and labor works, it was very difficult for her to manage NRs.100 per each visit.

According to her,

"*In the past I took the medicines for 5 months and additionally, I took the medicines for 1 month, later I was feeling better, So, I thought I was completely cured and need not take any more medicine and I stopped visiting the health facility for medicine. Moreover, I did not have money to visit the health facility and my children were also small. So, I quit the medicine for certain interval. I had some counseling on ART adherence during the initial days but I did not understand what the health provider was saying. It was a recent event that I talked to the health provider personally and I realized the importance of taking pills regularly only recently. These days Nava-Kiran Plus has been providing with the travel fare, So, I have been taking the drugs regularly and I have decided not to miss any pills further*."

Case II: Another participant, Suresh Kumar (Name Changed) of age 32 and married was infected through Injecting drug use. He revealed that stigma and discrimination prevailing in the society are one of the barriers to taking pills.

According to him,

"*Sometimes we are travelling out of the home, though we are carrying our medicine in our bags, we cannot take them out publicly because of the fear that other will know our status from the regimen prescribed and stigmatize us .We wait for our favorable time so that other do not see us taking the drug so, delay in taking the drugs is very common."*

CHAPTER V
DISCUSSION

It is difficult to measure adherence in the outpatient setting with absolute precision and accuracy While there may be no gold standard with which to measure adherence, adherence may be measured in the clinical setting by a variety of strategies such as self reports (including surveys, interviews and diaries), clinical assessments, pill counts, directly observed therapy (DOT), prescription refills, biological assays and Medication Event Monitoring System (MEMS).

The overall adherence rate for 1 month was found to be 84 percent which is similar o those reported from India and other developing countries like Senegal and South Africa. This indicates that 100 percent adherence to ART, is still a Challenge in the Far West of Nepal. Adherence to medication regimens is a continuum and may adversely be related to abilities and skills needed to adhere to complex regimens. It was evident that patients took home total number of prescribed doses, but did not take them at the scheduled times.

Socio demographic factors and adherence

The finding that age, sex, marital status, education level and employment status did not significantly affect adherence was similar to other studies elsewhere; Morse , Simon, Coburn, Hyslop, Greenspan & Balson (1991); Eldred, Wu, Chaisson, & Moorev (1998); Mothashari, Riley, Selwyn & Altice (1998); Pinheiro, Carvalho-Leite, Drachler, Silveria (2002); Besch (1995).

Surprisingly, there was no association between the participants' educational status and adherence to ART .This has also been shown by Cheng et. al in 2006. Although, studies from southern Brazil evidenced that Schooling was associated with the better adherence (Pinheiro, Carvalho-Leite, Drachler & Silveria, 2002) this study found no role of education in adherence.

Area of residence and adherence

Factors that were found to be significantly associated with good adherence were area of residence. People in Terai have easy access to transport facility thus improving their adherence status than those of clients residing in the hilly areas. People in the hilly area have difficulty in taking the drugs as prescribed as they have to travel the longer distance .The situation is even worse to the clients residing in hilly area when they fall seriously ill. The travel cost is also higher for the clients living in the hilly region thus leading to poor adherence among the client residing in hilly region.

Personal habits and adherence

Alcohol and smoking habit play a role in person's ability and skills in adhering to the treatment. Prior alcohol and Smoking habits are found to be significantly associated with poor adherence which is similar to the study conducted by Bhattacharya in Ethiopia in 2008. Due to the alcohol intake and smoking, they may get intoxicated and may forget to take the pills at the scheduled time.

Disclosure of HIV status and adherence

There are clients who do not want to disclose their HIV status due to the stigma and discrimination associated with the disease that is deep rooted in our society. Study conducted n 2004 established that patients also failed to take drugs as scheduled due to stigma associated with ARVs (Grierson, Bartos, De Visser & McDonald, 2000).

This study have evidenced that disclosure of their HIV status is associated with the better adherence. They are likely to be supported by their family members in collecting and taking drugs timely. Social or family support, peer interaction, and better physical interactions and relationships are characteristics of, patients who achieve optimal adherence (Motashari et al., 1998). Moreover, once disclosed they should not fear to take drugs which may helped in improving their adherence.

Duration on ART and adherence

The time since diagnosis and duration on ART are found to be significantly associated with the adherence rate. Client with longer duration of infection and those taking pills for a longer duration are likely to experience some sort of depression due to the high

pills burden. Longer duration of the therapy is also linked with the increasing financial burden.

Financial constraint and adherence

Travelling cost to reach facility is observed as one of the major barrier to access the health facility. A significant association was found between the travel cost and poor adherence. Financial burden is one of the major reasons for discontinuing treatment which has been highlighted in Sarna's study in 2008 in India and it is also reported in the study in Chennai that the most common form of non-adherence was associated with the cost for the service. Studies conducted in Africa reveal that the cost of medication is one of the most significant barriers to treatment adherence. In Botswana (Weiser et al. in 2003), it was also reported that adherence difficulties related to the financial demands of therapy and an inability to afford medicines for varying periods.

The extent to which financial difficulties played a key role in sub-optimal adherence is also reported in study findings in Uganda for patients receiving nonsubsidized therapy (Byakika-Tusiime et al., 2003). Medications and clinic visits cost money may stretch an already meager budget, thus increasing the likelihood of missing the pills in lack of travel cost in resource-poor countries like Nepal.

Perceived Side Effects and Adherence

Studies have shown that side effects have been consistently been associated with decreased adherence and patients who experience more than two aversive reactions are less likely to continue with the treatment (Stone, 2001). Patients may self-adjust their regimens because of side effects, toxicity or personal beliefs (Miller, 1997).Study from Nigeria found that adherence was found to be dependent on the side effects (Erah & Arute, 2008). However in this study, there was no association between the side effects and adherence. People may have continued to take drugs despite the side effects due to the perceived benefits of ART.

Other reasons for Non-Adherence

Information from the participants on adherence factors as reported to them by patients indicated that, being away from home, forgetting, being too busy, stigma attached to

ARVs, side effects, too many medicines to take, feeling sick and change in routine contributed to poor adherence. Studies have shown that side effects have consistently been associated with decreased adherence

The results established that being away from home contributed to poor timing of taking drugs among the patients. Several studies have shown that being away from home, being too busy and forgetting is closely interrelated (Orrell & Word, 2001; Platt, Tippy & Turk, 1994). Studies elsewhere have shown that people on ART have difficulties in taking drugs in public and carrying drugs around thereby adversely affecting adherence during travel (Grierson, Bartos, De Visser & McDonald, 2000).

Forgetfulness and being too busy have been cited as the most common reasons for poor adherence to medications (Ostrop, Hallert & Gill, 2000). A change in daily routine activities of the patients contributed to poor adherence to clinic schedules. If routine activities and lifestyles of patients are associated with medication schedules, adherence to medication can easily be accommodated (Catz et al., 2000).

CHAPTER VI
CONCLUSIONS

The adherence rate i.e. 84 percent seems to be encouraging; however achieving adherence for all the clients on ART is a great challenge. Factors determining the adherence to the treatment were identified as the area of residence, alcohol and smoking habit, perceived benefit of the treatment, disclosure status, satisfaction from the service provider and most importantly financial cost associated with the medications.

The findings emphasized the importance of multiple periodic assessments of adherence errors. Timely detection of non-adherence behaviors and appropriate monitoring of patients' difficulties with ART could potentially help patients to maintain adherence and therefore improve the treatment outcome. Finally the results suggested that psychosocial and medical interventions aimed at increasing adherence of ART-treated patients should integrate the dynamic dimensions of adherence behaviors. Adherence is a process, not a single event, and adherence support must, therefore, be integrated into regular clinical follow up. Investigation of factors related with long-term adherence would require longer follow-up than the present study.

In conclusion, in order to maximize the benefit of ARV therapy, patients should be educated on the need of adhering to taking the right dose at the right time as an intervention against barriers to adherence. Future research should investigate the cause of disparity in adherence between refills and time of taking ARV drugs, utilization of multiple measures of adherence to be incorporated in the care plans and multiple-target interventions focused to resolve the barriers to adherence should be implemented based on barriers defined to be potentially or actually present.

CHAPTER VII
RECOMMENDATIONS

Patient's centered educational program focusing on the people living with HIV/AIDS with to ensure a good understanding of the treatment of antiretroviral by the patient on the help of memory aids and keeping clinical appointment.

Continuous clinical monitoring and assessment of adherence should be done for provision of safe and effective antiretroviral therapy throughout the country.

HIV/AIDS patient needs treatment assistant usually someone living in the house hold that can assist with adherence issue.

Support group on ARV therapy should be organized for people living with HIV/AIDS to enable discussion of disclosure, psychological issue and barrier to adherence, evidence suggests that people cope better, if they share their HIV status.

Provision of the medication reminder can facilitate to take pills at scheduled time.

Comprehensive approach to adherence includes counselors and significant treatment literacy component, explaining the value and use of ARV drugs and prevention methods of HIV transmission.

Strengthening of training activities targeting clinical staff at the primary care level are needed to ensure that an HIV/AIDS patient is properly cared and on prevention of HIV transmission and improve the patient satisfaction.

Government’s initiatives towards financial and moral support to PLHA should be promoted to overcome the financial barrier and optimize the adherence rate.

Further study should be carried out to fill the gap. Future studies should be conducted for better understanding and interventions.

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ANNEXES

***Annex 1*:** Questionnaire schedule

ADHERENCE TO ANTI RETROVIRAL THERAPY AMONG PEOPLE LIVING WITH HIV/AIDS IN FARWEST, NEPAL

सु-सुचित मञ्जुरीनामा

नमस्कार, मेरो नाम किरण बम हो । म नोबेल कलेज, सिनामङ्गल, काठमाडौंमा स्नातक तहमा जनस्वास्थ्य विषय पढद्छु । मेरो अध्ययनको शिलसिलामा म यहाँ आएको छु । म ब्मजभचभलअभ तय ब्लतष्च्भतचयखष्चर्बा त्जभचबउथ कयलन एभयउभि ाष्खष्लन ध्स्तज ज्क्ख्रब्क्स्क ष्ल ाबच ध्भकत ल्भउर्बा विषयमा अध्ययन गर्दैछु । यस अध्ययनको प्रमुख उदेश्य ब्मजभचभलअभ तय ब्च्त को वर्तमान स्थिति पत्ता लगाउनु हो । म तपाईलाई यस अध्ययनमा सहभागी हुन आमन्त्रण गर्दछु । तपाईले यस अध्ययनमा सहभागी भए वापत कुनै प्रत्यक्ष फाइदा पाउनु हुने छैन । तर तपाईले दिएको सुचनाले भविष्यमा ब्मजभचभलअभ का बारेमा साथै यसका लागि सहयोग गर्ने र ल्यल(ब्मजभचभलअभ का बारेमा थाहा हुनेछ । यस अन्तरवार्तामा तपाईको सहभागिता स्वेच्छिक हुनेछ तथा तपाईले चाहेमा कुनै पनि समयमा यो अन्तरवार्ता रोक्न सक्नुहुन्छ । तैपनि तपाईका विचारहरु महत्वपूर्ण हुने भएकोले तपाई सहभागी हुनुहुनेछ भन्ने मैले आशा लिएको छु ।

म तपाईलाई आश्वस्त तुल्याउन चाहन्छु कि तपाईले दिएको सुचना पूर्ण रुपमा गोप्य राख्नेछु । यो अन्तरवार्ता करिब ४५मिनेट देखि १ घण्टाको हुनेछ । यदि तपाई यस अन्तरवार्तामा सामेल हुन चाहनुहुन्छ भने म यसै मार्फत तपाईको सहमतिको लागि अनुरोध गर्दछु।

यदि उत्तरदाता अन्तरवार्ताको लागि मञ्जुर हुनुभएन भने .....१ – यहि रोक्नुहोस् ।
यदि उत्तरदाता अन्तरवार्ताको लागि मञ्जुर हुनुभयो भने .....२ – अन्तरवार्ता सुरु गर्नुहोस् ।

म तपाईको सहमतिको लागि धन्यवाद दिन्छु र अन्तरवार्तामा स्वागत गर्दछु ।

मिति .....(दिन/महिना/साल)

स्वास्थ्य संस्थाको नाम .....

अध्ययन संख्या .....

जोखिम समूहः.....

बिरामीको परिचय पत्रबाट लिनुपर्ने जानकारी

ठेगाना : **स्थायी** ..... **अस्थाई** .....

सकमित भएको मिति :.....(दिन/महिना/साल)

उपचार सुरु गरेको मिति : ..... (दिन/महिना/साल)

ऋम्द्ध अर्भाकि को संख्या : ब्च्त सुरु गर्न पूर्वः.....सुरु गरे पछि .....(.६ महिना/अन्तिम पल्ट)

(१) उमेर : .....(पुरा भएको वर्ष)

(२) लिङ्ग : १( ) पुरुष ० ( ) महिला

(३) जात १( ) ब्राहमण २ ( ) क्षेत्री

३( ) थारु ४ ( ) दलित

५( ) जनजाती ६ ( ) अन्य (उल्लेख गर्नुहोस्

(४) धर्म :

१ ( ) हिन्दु २ ( ) बौद्ध

३ ( ) ईस्लाम ४ ( ) ख्रीस्ट

० ( ) अन्य (उल्लेख गर्नुहोस्

(५) वैवाहिक स्थिति :

१ ( ) विवाहित २ ( ) अविवाहित

३ ( ) सम्बन्ध विच्छेद ४ ( ) छुट्टिएको

(६) बसोवास गर्ने ठाउँ

१ ( ) स्थानीय ० ( ) गैर स्थानीय

(७) तपाईको शैक्षिक योग्यता बनाई दिनुहोस् न ?

० ( ) निरक्षर १ ( ) साक्षर

२ ( ) प्राथमिक ३ ( ) निम्न माध्यमिक

४ ( ) माध्यमिक ५ ( ) उच्च माध्यमिक वा बढी

(८) तपाई को सँग बस्नु हुन्छ ?

१ ( ) श्रीमति
२ ( ) छोराछोरी
३ ( ) आमा बुवा
४ ( ) अन्य (उल्लेख गर्नुहोस)

(९) तपाईको परिवारको मुख्य आम्दानीको श्रोत के हो ?

१ ( ) कृषि
२ ( ) कर्मचारी
३ ( ) व्यापार
४ ( ) श्रमजीवी
५ ( ) अन्य (खुलाउनुहोस्)

(१०) के तपाई वा तपाईको परिवारले यस औषधीका लागि केही दिनुपर्ने हुन्छ ?

१ ( ) पर्छ
० ( ) पर्दैन

(११) जम्मा पारिवारीक मासिक आय .....(ने. रु)

(१२) तपाई के काम गर्नुहुन्छ ? .....

(१३) तपाईको जम्मा मासिक आय .....(ने. रु)

वानी व्यहोरा वारे :

(१४) विगत १ महिनामा भित्र तपाईले मदिरा(बियर, जाँड, रक्सी)कतिको सेवन गर्नुभयो ?

६ ( ) दिनहु
५ ( ) प्राय सधैं
४ ( ) ३-४ पटक हप्तामा
३ ( ) १-२ पटक हप्तामा
२ ( ) २-३ पटक महिनामा
१ ( ) १ पटक महिनामा
० ( ) खाँदिन

(१५) धुम्रपान कतिको गर्नुहुन्छ ?

१ ( ) गर्छु
० ( ) गर्दिन

गर्नुहुन्छ भने दिनको कति खिल्ली ?

१ ( ) १-२ खिल्ली
२ ( ) ३-४ खिल्ली
३ ( ) ५-६ खिल्ली
४ ( ) ६ खिल्ली भन्दा बढी

(१६) लागु औषधी सेवनवारे

विगत १ महिनामा, धुम्रपान, मध्यपान वाहेक अन्य कूनै लागू पदार्थ सेवन गर्नु भएको छ ?

१ ( ) गरेको छ ० ( ) गरेको छैन

यदि गरेको छ भने कुन माध्यमवाट गर्नु भएको थियो ?

१( ) मुखवाट २( ) सुघेर

३( ) सुइवाट ४( ) अन्य उल्लेख गर्नुहोस ।

कुन पदार्थ सेवन गर्नु भएको थियो ?.....

(१७) तपाईले आफ्नो स्थीतिको बारेमा कसैलाई भन्नुभएको छ ?

१ ( ) छ २ ( ) छैन

यदि छ भने, कसलाई

१ ( ) साथीहरु २ ( ) परिवारको सदस्यहरु

३ ( )स्वास्थ्यकमी ४( ) अन्य (उल्लेख गर्नुहोस्)

यदि छैन भने किन नभन्नुभएको ? .....

(१८) के तपाईले आफुमा संक्रमित भएकै कारण अरुबाट आफुलाई भिन्न व्यवहार गरिएको अनुभव गर्नुभएको छ?

१ ( ) छ ० ( ) छैन

यदि छ भने कहाँ :-

१ ( ) परिवारमा २ ( ) काम गर्ने ठाउमा

३ ( ) साथी माझमा ४ ( ) अरु (खुलाउनुहोस्)

(१९) के तपाईले ज्ख्खब्क्म्क को औषधी/उपचार छोड्छु भन्ने सोच्नु भएको छ ?

१ ( ) छ ० ( ) छैन

यदि छ भने किन .....

(२०) ज्ख्ख संक्रमण बारे तपाईलाई के थाहा छ ?

(ज्ख्ख को कारणहरु ,रोकथाम गर्ने उपाय ,जीवनभरको संक्रमण)(प्रत्येकलाई १ अंक)

(२१) तपाईलाई ब्च्ख्ख को बारे थाहा छ ?

(जीवनस्तर बढाउने ,जीवन भरको उपचार ,नकारात्मक असर बारे थाहा)(प्रत्येकलाई १ अंक)

के तपाईले ब्मजभचभलअभ का बारेमा परामर्श पाउनु भएको थियो ?

१( )थियो ०( )थिएन

(२२) जीवनको गुणस्तर

(सम्मान पाएको अनुभुति, गोपनियता,कुरा सुन्ने प्रश्न सोध्ने अवसर पाईन्छ)(प्रत्येकलाई १ अंक)

(**नोट** : ३ – धेरै राम्रो २ – राम्रो १ – कमजोर)

(२३) तपाई साथीहरुको /परिवारको सहयोगबाट कतिको सन्तुष्ट हुनुहुन्छ ?

० ( ) असंतुष्ट

१ ( ) अलि असन्तुष्ट

२ ( ) अलि सन्तुष्ट

३ ( ) धेरै सन्तुष्ट

(२४) तपाई कतिको विश्वस्त हुनुहुन्छ ?

(क) तपाई सम्पुर्ण औषधी नियमित रुपले सेवन गर्न सक्नुहुन्छ ?

१ ( ) त्यती खासै छैन ।

२ ( ) अलि अलि विश्वस्त छु

३ ( ) विश्वस्त छु ।

४ ( ) अत्यन्त विश्वस्त छु ।

(ख) ब्च्त ले तपाईको स्वास्थ्यमा सकारात्मक असर गर्छ ?

१ ( ) त्यती खासै छैन ।

२ ( ) अलि अलि विश्वस्त छु।

३ ( ) विश्वस्त छु ।

४ ( ) अत्यन्त विश्वस्त छु ।

(ग) ब्च्त नियमित रुपमा सेवन नगरेमा प्रतिरोधात्मक क्षमता शरीरमा विकास हुन्छ ?

१ ( ) त्यती खासै छैन ।

२ ( ) अलि अलि विश्वस्त छु।

३ ( ) विश्वस्त छु ।

४ ( ) अत्यन्त विश्वस्त छु ।

(२५) तपाईले ब्च्त कति समय सम्म सेवन गर्नुपर्ने हुन्छ ? .....(महिना)

(२६) विगत १ महिनामा के तपाईले ब्च्त औषधी दिइएको छ ? १ ( ) छ ० ( ) छैन

(२७)के तपाईले औषधी ठीक र सही समयमा खानुभएको छ ? १ ( ) छ ० ( ) छैन

के तपाईले विगत १ महिनामा के तपाईले कहिले औषधी खान छुटाउनु भएको छ ? १ ( )छ ० ( )छैन

यदि छ भने पछिल्लो पटक ब्च्ख् औषधी मध्ये कुनै पनि औषधी कहिले खान छुटाउनु भएको थियो ?

१ ( ) १ हप्ता भित्र
२ ( ) १-२ हप्ता पहिले
३ ( ) २-४ हप्ता पहिले
४ ( ) १-३ हप्ता अघि
५ ( ) ३ महिना अघि

कति पटक ?

१ ( ) एक
२ ( ) दुई
३ ( ) तीन
४ ( ) ३ पटक भन्दा बढी

जम्मा पिल्सको संख्या .....

छैन भने, तपाईले औषधी खान र नभुल्नुको कारण के हुन् त ?

१ ( ) साथीहरु
२ ( ) परिवार
३ ( ) मोवाइल
४ ( ) भित्तेपात्रो
५ ( ) घडी
६ ( ) अन्य (उल्लेख गर्नुहोस्) ....

(२८) तपाईको साथी र परिवारले कुन हदसम्म औषधी सेवन गर्न सघाउनुहुन्छ ?

१ ( ) सघाउदैन
२ ( ) अलि अलि
३ ( ) केही हदसम्म
४ ( ) धेरै
५ ( ) एक्लै बस्ने गर्छु

(२९) ब्च्त् बाहेक अरु कुनै उपचार पद्धति प्रयोग गर्नु भएको छ ?

१( ) परम्परागत औषधी
२( ) जडीबुटी
३( ) अस्पतालको औषधी
४( ) ऋष्लिष्अ र एजबक्कबअथको औषधी
५( ) अन्य (खुलाउनुहोस्) .....
६( ) केहि खादैन

(३०) विगत १ महिनामा

क्र.स	औषधी खान छुटाउनुभयो निम्नकारणले	कहिले पनि छैन	एकदमै कम	कहिलेकाँ ही	प्राय
१	नकारात्मक असरबाट बच्नका लागि				
२	औषधी साथीभाई र परिवारलाई बाँडेकोले				
३	धार्मीक आस्थाको कारण				
४	ब्च्त का बारे राम्रो सँग जानकारी र महत्व नभएको कारण				
५	घरबाट टाढा जानुपर्ने भएकोले (उदाहरण: कामका लागि, साथी परिवार भेट्न, घुम्न)				
६	ब्च्त केन्द्र सम्म यातायात को सुविधा नभएकोले				
७	औषधी हराएको र चोरी भएको कारणले (उदाहरण : घर फर्किदा रिक्सामा र बसमा)				
८	धेरै औषधीका कारण				
९	कुनै नराम्रो धारणा जसको कारण औषधी भएकोले				
१०	विर्सनु भएकोले				
११	औषधीबाट टाढा भाग्न खोज्नुभएकोले				
१२	व्यवस्ताको कारण (उदाहरण : काममा, व्यवसाय)				
१३	प्रशस्त खानाको कमीले (उदाहरण : औषधी सँग खानुपर्ने चीज				
१४	ब्च्त ले एकदमै राम्रो काम गर्छ र मैले आर्थिक सहयोग गुमाउछु भन्ने डरले				
१५	अरुले थाहा पाएर घृणा र भेदभाव गर्छ भन्ने डरले (उदाहरण अरुले के भन्लान)				
१६	आफ्नै परिवार भित्र पनि भेदभाव र उपेषित भईन्छ भन्ने डरले (उदाहरण : श्रीमान्, श्रीमती वा अन्य परिवारका सदस्यले थाहा नपाओस् भनेर)				
१७	ब्च्त विषाक्त र घातक भएकोले				
१८	एर्षीक घाम र भिजेर खराब भएकोले				
१९	सिकिस्त विरामीका कारण ब्च्त केन्द्र जान नभ्याउनु भएकोले				
२०	एकदमै निराश भएकोले				
२१	ब्च्ख्क ले साच्चै काम गर्छ जस्तो नलागेर				
२२	तपाई सपनाले पिरोलिनुभएकोले				
२३	अन्य कारण (उल्लेख गर्नुहोस्)				

(३१) औषधीका कारण तपाईलाई कुनै नकारात्मक असर देखा परेको छ ?

( ) थकाई	( ) वान्ता	( ) झाडापखाला
( ) रिगंटा लाग्ने	( ) टाउको दुख्ने	( ) हाड जोर्नी दुख्ने
( ) वाकवाकी	( ) चिन्ता बढाउने	( ) क्लकफलष्व
( ) एबलअचभबतष्तष्क	( ) अन्य (उल्लेख गर्नुहोस्)	

स्वास्थ्य संस्था बारे

(३२) यस केन्द्रबाट पाएको सुविधाबारे तपाईको के विचार छ ?

क) तपाईको कुरा कतिको सुन्छन् ? १ ( ) सुन्छन् ० ( ) सुन्दैनन्

ख) आफ्नो समस्या र प्रश्न सोध्ने मौका पाउनुहुन्छ ? १ ( ) पाउछु ० ( ) पाउदैन

ग) तपाईले आदरपूर्ण व्यवहार पाउनुहुन्छ ? १ ( ) पाउछु ० ( ) पाउदैन

घ) के तपाई स्वस्थ्यकर्मी प्रति विश्वास गर्नुहुन्छ ? १ ( ) गर्छु ० ( ) गर्दैन

ङ) परामर्श र भेट्न आएको बेला कतिको गोपनियता अपनाईन्छ ?

१ ( ) अपनाउछन् ० ( ) अपनाउदैन

च) यस केन्द्रको वातावरण तपाईलाई कस्तो लाग्यो ?

.....

(३३) तपाईलाई स्वास्थ्यकर्मीले तपाईको रोगबारे कतिको जानकारी दिनुहुन्छ ?

१ ( ) दिन्छन् ० ( ) दिदैनन्

यदि दिन्छन् भने,

क) कस्तो प्रकारको जानकारी पाउनुहुन्छ ?

.....

(३४) औषधीका लागि पैसा तिर्नुहुन्छ ? १ ( ) तिर्छु ० ( ) तिर्दैन

यदि तिर्छु भने, कति तिर्नुहुन्छ ? .....(ने. रु)

(३५) के तपाई औषधी लिन आफै आउनुहुन्छ ? १ ( ) आउछु ० ( ) आउदैन

आउदैन भने को आउनुहुन्छ ?

१ ( ) साथीहरु २ ( ) परिवारको सदस्यहरु

३ ( )स्वास्थ्यकमी ४( ) अन्य (उल्लेख गर्नुहोस्)

(३६) औषधी लिन कति कति समयमा आउने गर्नुहुन्छ ?

१( ) दिनहु २( ) हप्ता पिछै

३( ) महिनामा ४( ) अन्य (उल्लेख गर्नुहोस्)

(३७) कुन समयमा औषधी संकलन गर्नुहुन्छ ?

१( ) १० बजे भन्दा अघि २( ) १०-१२ बजे दिउसो

३( ) १२-४ बजे सम्म

(३८) के तपाईलाई यो समयमा आउन सजिलो र ठीक छ ? १( ) छ ०( ) छैन

(३९) यस उपचार केन्द्रमा कसरी आउनुहुन्छ ?

१( ) हिडेर २( ) बसमा

३( ) आफ्नै गाडीमा ४( ) रिक्सा वा साइकलमा

(४०) यो केन्द्रमा आउँदा कति समय लाग्छ ?

१( ) ?३० मिनेट २ ( ) ३० मि.- १ घण्टा

३( ) १-२ घण्टा ४( ) श्र३ घण्टा

(४१) एक पल्ट आउदा कति खर्च हुन्छ ? .....(ने. रु)

(४२) प्रत्येक पल्ट आउदा कति समय पर्खनुहुन्छ ?

१ ( ) ?१५ मिनेट २ ( ) १५ मि. - १ घण्टा

३ ( ) १ - २ घण्टा ४ ( ) श्र २ घण्टा

(४३) के यो पर्खनुपर्ने समय तपाईलाई ठीक लाग्छ ?

१( ) लाग्छ ०( ) लाग्दैन

(४४) तपाईले पाएको सुविधाबाट तपाई सन्तुष्ट हुनुहुन्छ ? १( ) छ ० ( ) छैन

यदि छैन भने किन .....

(४५) अन्त्यमा,

क) यस ब्च्ख उपचारको क्रममा तपाईले भोग्नु परेका मुख्य समस्याहरु के हुन् यदि छैनन् भने के कारणले सहज भयो भन्नुहोस् ?

ख) तपाईको विचारमा भोगेको समस्याको समाधान के होला र छैनन् भने भविष्यमा झन राम्रो गर्न के गर्न सकिन्छ ? (उपचार सुविधा सहज बनाउन)

ग) मेरा लागि तपाईका तर्फ बाट केही प्रश्न छन् भने सोध्नुहोस् ?

तपाईको समय र सहयोगका लागि धन्यवाद १

***Annex 2*:** Sample Size Calculation

In Nepal, As of the NCASC, December 2008

Total HIV Positives=12484(excluding deaths)

HIV Positives above 15 years=11721

Total ART Taking Persons above 15=2417

Hence, p=2417/11721=0.21, q=1-p=1-0.21=0.79

In Far western Development Region,

Total ART Taking Persons above 15(N) =565

For Finite Population in 95% CI

The following formula were used for estimation of sample

$n = Z^2pqN / \alpha^2(N-1)+ Z^2 pq$

n= 360.09/2.047= 176

The estimated total number of sample size in the study = 176

Where:

N=565

n=calculated sample size

$Z\alpha = 1.96$ ($\alpha = 0.05$)

P=0.21

q=1- p=1 – 0.21 = 0. 79

d =error allowance = 0.05

Total ART Taking Persons in FWDR above 15 years=565

In Seti Zonal Hospital=337

In Mahakali Zonal Hospital=26

In Achham District Hospital=90

In Doti District Hospital=112

Therefore,

60% of 176= 106 samples from Seti Zonal Hospital

5% of 176=9 samples from Mahakali Zonal Hospital

16% of 176=28 samples from Achham District Hospital

19% of 176=33 samples from Doti District Hospital

Annex 3: ART Centers in Nepal as of June 2009

ART Centres in Nepal		
SN	**ART Centres**	**District**
1	Teku Hospital,Teku	Kathmandu
2	Bheri Zonal Hospital, Nepalgunj	Banke
3	Sparsha Nepal, Sanepa	Kathmandu
4	TUTH, Maharajgunj	Kathmandu
5	BPKIHS, Dharan	Sunsari
6	Western Regional Hospital, Pokhara	Kaski
7	Narayani Sub-Regional Hospital, Birgunj	Parsa
8	Mahakali Zonal Hospital, Mahendranagar *	Kanchanpur
9	Seti Zonal Hospital, Dhangadhi*	Kailali
10	Doti District hospital, Silgadhi *	Doti
11	Lumbini Zonal hospital, Butwal	Rupandehi
12	Achham District hospital, Achham *	Achham
13	Baglung District Hospital, Baglung	Baglung
14	Koshi Zonal Hospital, Biratnagar	Morang
15	Bharatpur Hospital, Chitwan	Chitawan
16	Mechi Zonal Hospital, Jhapa	Jhapa
17	Kanti Children's Hospital, Maharajgunj	Kathmandu
18	Janakpur Zonal Hospital, Janakpur	Dhanusha
19	Palpa District Hospital, Tansen	Palpa
20	Mid-west Regional Hospital, Surkhet	Surkhet
21	Mahendra Hospital, Dang	Dang
22	Maiti Nepal, Kathmandu	Kathmandu
23	Sagarmatha Zonal Hospital	Rajbiraj

*****were included in the study

Source: NCASC, 2009

Annex 4: Map of the Study Area