

**Quality of Care at ART Clinic in Shashamanne
Referral Hospital, West Arsi Zone, Oromia National
Regional State, South Ethiopia**

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Abstract

Background: In low income nations like Ethiopia, which are heavily affected by HIV pandemic, health system needs to provide comprehensive services for escalating numbers of HIV positive patients. As demand increases, resources are not expanding at desirable rates to meet it. This leads to the risk of running poor quality antiretroviral therapy in resource limited health facilities but there is paucity of research based evidences on the quality of health services in the country in general, and on anti retroviral therapy in particular.

Objective: To assess quality of care at antiretroviral therapy clinic in Shashamanne Referral Hospital.

Methods: A cross-sectional study was conducted in Shashamanne Referral hospital from Sept. 20 to Oct.30, 2013. The study populations were selected people living with HIV, antiretroviral therapy clinics, and health care workers in antiretroviral therapy clinics during the study period. Stratified sampling method was used to select study population. Interviewer administered questionnaires were used for 204 patients to assess their satisfaction. Medical records review checklist was designed to get vital information from documents of 354 patients. Interview guide was also used to assess providers' view on services. Data were entered using SPSS version 20 to maintain its quality and analyzed by descriptive, bivariate and multivariate techniques. Ethical clearance was obtained from Jimma University College of Public Health and Medical Sciences.

Results: Resources required for implementation of antiretroviral therapy were available as per recommendation by the national Guideline but scarcity of some opportunistic infections drugs, anti retroviral drugs and absence of a few laboratory services seen in the hospital. HIV/AIDS care given in line with national guidelines, but this study revealed that only 42.7% of clients among eligible for isoniazid preventive therapy actually taken it. Seventy seven percent of clients were strongly dissatisfied on total length of stay at ART clinic and 72.5% of clients were dissatisfied on understanding results of laboratory tests like CD4 count meant for their health.

Conclusion: Though services in ART clinic provided in line with the national guideline, desired coverage of isoniazid preventive therapy was not attained. Increased waiting time at medical record department and poor information provided to clients on their laboratory results were among main reasons for dissatisfaction at ART clinic.

So collaborative efforts have to be exerted by Shashamanne referral hospital and other concerned bodies to optimize isoniazid prophylaxis, reduce increased waiting time and deliver adequate information for clients on results of their laboratory investigations at ART clinic.

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Acronyms

3TC	Lamvudin
ABC	Abacavir
AIDS	Acquired Immuno Deficiency Syndrome
ARV	Anti Retro Viral
ART	Anti Retroviral Therapy
AZT	Zidovudine
CD4	Cluster differentiation 4
CPT	Cotrimoxazole Preventive Therapy
CU-ICAP	Colombia University-International Centre for AIDS Care and Treatment Program
D4T	Stavudine
DDI	Dedanosine
EFV	Efavirenz
FHAPCO	Federal HIV/AIDS Prevention and Control Office
FMOH	Federal Ministry Of Health
HAART	Highly active Anti Retro Viral Therapy
HIV	Human Immune Deficiency Virus
IDU	Intravenous Drug Users
IEC	Information Education communication
IPD	In Patient Department
IPT	Isoniazid Preventive Therapy
IRIS	Immune Reconstitution Inflammatory Syndrome
JUSH	Jimma University Specialized Hospital
LFT	Liver Function Test
LPV	Lopnavir
LTFU	Lost to Follow UP
MRD	Medical Record Department
NAC	National AIDS Control
NGO	Non Governmental Organization
NRTIs	Nucleoside reverse transcriptase inhibitors
NVP	Nevarapine
OIs	Opportunistic Infections

OPD	Out Patient Department
PCP	Pneumocystic pneumonia
PFSA	Pharmaceutical Fund and Supply Agency
PLWHA	People living with HIV/AIDS
PMTCT	Prevention of Mother to Child Transmission
PRE-ART	Pre Anti Retro Viral Therapy
RFT	Renal Function Test
RRF	Report Request Form
RUTF	Ready to Use Therapeutic food
SNNPRGs	Southern Nation nationalities and People's State
SRH	Shashamane Referral Hospital
TB	Tuberculosis
TDF	Tenofovir
UNGASS	United Nation General Assembly Special Session
WHO	World Health Organization

Chapter 1: Introduction

1.1 Background

HIV/AIDS continues to be a major public health issue which posed a great problem to our Globe for the past three decades. HIV infection still spreading and affecting all sectors of society, over 25 million people passed away during this period by HIV/AIDS. There were more than 34 million people living with HIV in the World in 2011 [1].

There is no cure for HIV infection. However; effective treatment with ARV drugs can control the virus so that people with HIV can enjoy healthy and productive life. In 2011 more than 8 million people living with HIV were receiving ART in low and middle income countries. Another 7 million people need to be enrolled in treatment to meet the target of providing ART to 15 million people by 2015[1].

Ethiopia started ART service free of charge in 2005 in a few hospitals. Now the service expanded to health centers with aim of Universal Coverage to ART. In Ethiopia around 1.2 million people live with HIV. Despite strong government effort to treat and control HIV/AIDS there is still more efforts required to improve health status of PLWHA. In low income nations like Ethiopia, heavily affected by the HIV pandemic health systems need to provide comprehensive care and treatment services for escalating numbers of patients with HIV. As a result, as demand for care increases, resources are not expanding at desirable rates to meet this demand [2, 8,9].

HIV/AIDS care and treatment will need to meet service demands primarily through improvements in system efficiency and more effective utilization of existing resources i.e. through provision of quality care and treatment services. Therefore, studying of existing quality of service in ART clinic will provide health managers and professionals with useful information that could lead to reforms that encourage quality services in the health facilities.

1.2 Statement of the Problem

AIDS is incurable disease caused by human immune deficiency virus. The main mode of HIV/AIDS transmission is unsafe sexual intercourse and contaminated body fluids. Children acquire infection from their mother. HIV/AIDS attacks all segment of the society- young, adult, male, female, rich and the poor. However, commercial sex workers, handicapped and intravenous drug users (IDUs) are the more vulnerable groups to HIV infection. AIDS is a major public health problem affecting entire population of the globe since the past three decades. Starting from 1980s over 25 million people died because of AIDS and in 2011 more than 34

million people is living with HIV infection at different corners of the world. Sub-Saharan Africa is the most affected region where nearly 69% of people living with HIV found [1].

In Ethiopia around 1.2 million people live with HIV/AIDS. The epidemic of HIV infection in Ethiopia is marked by pockets of high prevalence in urban areas and among women. In 2009 the prevalence of HIV infection was 7.7% in urban areas and 0.9% in rural areas, 2.8% among females as compared to 1.8% among male [1].

Less than one third of Ethiopia's HIV positive patients are currently enrolled in comprehensive care and support services. Despite strong government effort, only 62% of eligible patients were currently receiving ARV drugs. This is mainly due to human resource shortage, its disproportionate distribution grossly skewed to urban centers together with low retention, moral and job satisfaction causing high turnover among health care workers of all categories. And become the challenges of the ART program. Other most prominent challenges such as inadequate infrastructure, networking, low capacities of service delivery and poor quality of care at all levels remain to be addressed to achieve intended outcomes [2, 5].

Low income nations like Ethiopia, which is affected heavily by the HIV pandemic, health systems need to provide pre-antiretroviral care and chronic ART follow up and treatment services for escalating numbers of patients who are HIV positive for the predictable future. While demand is increasing, resources are not expanding at desirable rates to meet this demand. The ever increasing demand for ART services runs the risks of poor quality services in public health facility ART clinics that are over burdened and under resourced[8].

Studies have not been conducted on such matters in the area and empirical evidence is very helpful to act on the problem locally.

Chapter 2: Literature Review

Since 2002, access to ART has dramatically improved with now three million of HIV infected patients receiving ART in sub-Saharan Africa. This has been estimated to have averted 2.5 million deaths in those settings. In Ethiopia about 90,006 ART patients receiving regular treatment. However, the ever increasing demand for ART runs the risk of leading to sub-optimal quality of care in public health facility ART clinics that are overburdened and under resourced [3, 7, 8].

Therefore, in the following sections a comprehensive assessment of quality of ART services have been reviewed by taking Donabedian's structure–process–outcome model of health care into consideration.

Structure/input

Availability of ARV, OIs and prophylactic drugs

During the initial years of HIV/AIDS pandemic the major focus was on prevention of the disease followed by care and supports of infected individuals particularly those suffering from opportunistic infections. Later on, treatment guidelines and protocols developed following antiretroviral drugs invention. These changed the world's belief on HIV/AIDS from a death sentence to a chronic manageable disease [11].

Earlier the high cost of ARV drugs and its complicated treatment regimens were among potential barriers to expand HIV/AIDS chronic care and treatment. The UNGASS pushed forward a new global consensus on the need for ART. WHO released guidelines for the use of ART in resource constrained settings and added generic ARV drugs to its list of essential medicines so as to increase ARV drugs availability [5].

World health organizations also recommend existence of OIs and prophylactic drugs to give comprehensive treatment and preventive services for patients. This goes to ensuring the availability of Isoniazid and Cotrimoxazole without interrupting their supply in the health facilities as prophylaxis against TB and other OIs respectively [10, 12].

Though all the hospitals in Ethiopia provide drugs free of charge specifically ARVs and Cotrimoxazole tablets for ART clients; there was a scarcity of the type and continuity of highly demanded ARV and OI drugs [34]

Availability of trained health professionals

The scarcity of human resources is a prominent feature of weak health system capacity. The WHO estimates that an additional 4 million health workers are required to achieve the 2015

millennium development goals. Even though Africa has 14% of the world's population and 25% of the disease burden, it only has 1.3% of the health workers. On average, there are 0.8 health workers per 1000 people. One million health care workers are needed in sub-Saharan Africa where there is lowest density of health workers and the highest disease burden in the world. To deliver quality HIV/AIDS care and treatment services, availability of trained health professional plays a key role in a given health care facility. Additionally, their low retention, moral and job satisfaction causing high turnover among health care workers of all categories and become the challenges of the ART program [13, 31].

Availability of laboratory investigations

Laboratory capacity is a very crucial support service for HIV/AIDS care provision. All tertiary-level facilities and nearly all secondary-level facilities have almost all laboratory services. However, only about 40% of primary-level facilities report an on-site laboratory indicating an important gap in service provision at lower-level facilities. Concerning equipment and supplies to conduct specific laboratory tests, all most all laboratories must have Rapid HIV tests, Viral load test, CD4 count, BF, Hematology, pregnancy test, sputum smear microscope, liver function and renal function test despite some important distinctions by facility background characteristics [14]. In Ethiopia many donors invest and give technical support on laboratory services. This reduced unavailability of mostly ordered laboratory services in ART clinics. However, laboratory equipments such as CD4 machine could have been broken down or become non functional for one or another reason, as a consequence patients had to wait for the hospitals to get the machine repaired [28].

Availability of various registers/formats

Presence of intra and inter facility referrals are very important in linking HIV clients to chronic care service. Availability of other registers (IPD, OPD), laboratory requests and appointment cards significantly improve the quality of chronic HIV care and treatment by keeping patients information for different purpose [15].

Process quality

Compliance with national guidelines

Compliance with guideline is important to prioritize the best options for treatment of HIV infection and propose alternatives if the best option was not available. It also used to identify the most potent, effective and feasible first-line and second-line drugs, to improve criteria for ART switching and subsequent treatment regimens as components of HIV care. Health care workers and program managers need to depend on guidelines to provide quality HIV/AIDS care and

treatment [16]. Study conducted in public hospitals of Addis Ababa showed that almost all different up to date guidelines have been available on ART, STI, TB, CPT, VCT, PITC and OI. However, the guidelines are not kept at proper place in organized ways. Besides, the providers have problems where and how to get them for use. Except few providers use the guidelines consistently, others because of the workload and negligence mostly depend on their memory only than referring appropriate guide lines [34].

HAART initiation and provision of OIs and prophylactic drugs

The fundamental need for earlier HIV diagnosis, enrolment into care and chronic follow up is to determine eligibility for ART, initiation of ART before any sickness occurs and to minimize treatment complication such as IRIS [16]. The initiation of ART is based on the clinical stage and the CD4 count which also used to guide treatment and follow-up. The lack of a CD4 result should not delay the initiation of ART if the patient is clinically eligible according to the WHO clinical staging. Initiate HAART at $CD4 \leq 350$ cells/mm³ and WHO clinical stage three and four. Provide Cotrimoxazole prophylaxis to patients with CD4 count < 350 cells/mm³, WHO clinical stage three and four, prior history of PCP and TB/HIV co-infection. Similarly, patients living with HIV should be screened for TB with standard clinical symptoms and those who do not report any one of standard clinical symptoms are unlikely to have active TB and should be offered IPT [11, 12 and 16]. Though there is no adequate study conducted on timely initiation of HAART and OIs drugs in Ethiopia, data obtained from routine programs in South Africa suggests that the delays in ART initiation which is common in some clinics cause substantial mortality among the most immune suppressed patients. Reducing delays to ART initiation for all eligible patients in high-burden settings, especially those with lower CD4 counts and free from opportunistic infections can save thousands of lives every year [9, 37].

Tracing loss to follow up

Access to ART has improved substantially in resource-limited settings in Africa. Despite this success remarkable number of HIV/AIDS patient loss to follow within first two years of enrollment to chronic HIV care. A study in sub-Saharan African indicates that about 35% of patients lost to follow up in 3 years following ART initiation [18]. In Ethiopia, study from Jimma indicated that around 13% defaulter rates among 1270 Patients initiated ART between 2005 and 2007. Tracing of those patients was not successful because of incorrect address on the register in 61.6% of the cases. A similar study that was conducted in 2006 in Amahara region in Baherdar Feleg Hiwot Hospital and Gondar Referral Hospital showed that lost to follow up rate is 18% and 19% respectively And the majority of the patients who were traced retrospectively were

found to be dead [36]. Another study at Arba Minch hospital indicated that about 6.3% lost to follow up while they were on pre-ART care and follow up [17]. ART clinics also face serious operational challenges to trace patient loss to follow up [18].

Prevention of mother to child transmission

Mother-to-child transmission of HIV remains the major route of pediatric HIV infection in sub-Saharan Africa where over 90% of the 2.1 million children living with HIV reside. ART access for pregnant women highly reduces mortality among them and their children. Eligibility criteria for ART initiation were reviewed and those with a CD4 cell count below 350cells/mm³ should be on HAART including WHO stage three and four regardless of CD4 count. For women with CD4 counts >350 cells/mm³ and who are not eligible for treatment need to start ARV prophylaxis as early as 14 weeks of gestation and provide extended ARVs to both mother and child during the postpartum risk period following the decision on breastfeeding. Child born from such mother takes single dose of NVP daily through age of 4-6 weeks and one week after complete cessation of breastfeeding. These are cases in option A. However, when mother is on HAART or on multiple dose of ARV prophylaxis in pregnancy single dose of AZT prophylaxis is not required but Child takes single dose of NVP daily through age of 4-6 weeks regardless of its feeding methods. Ethiopia adopted option B, putting every pregnant mother on HAART regardless of any eligibility criteria and provision of single dose of NVP to child daily through age of 4-6 weeks, irrespective of its feeding methods (3, 6, 19 and 20).

Nutritional counseling and supplementation for PLWHA

Malnutrition among HIV-positive persons is common. It further contributes to immune system impairment and accelerates disease progression. To improve and maintain better nutritional status the WHO encouraged the use of RUTF for HIV/AIDS patients. Therefore, health care workers at ART clinics have to assess malnutrition either to counsel on feeding habit or to provide nutritional therapy for patients [21, 22].

Outcome assessment

Immunological and clinical improvement

To assess how well a combination of ARV drugs is working for the patient the best way is measuring baseline CD4 count before HAART initiation or when switching regimen. CD4 count repeated every six months to see ART effectiveness. Gradual increase in CD4 count is suggestive of immunological improvement but 50% falls from the on treatment peak value, persisting of CD4 count to pre-therapy and below 100 cells/mm³ for long duration can be considered as immunological failure.

However, in absence of CD4 count clinical monitoring is another option to check whether treatment achieved intended goal or not. When the treatment achieved its goal patients gain weight and become free from new opportunistic infection. The vice versa is termed as treatment failure [4, 11]. Complete immune recovery following HAART is not observed in any of the patients. Absent or small improvements in CD4 counts occur in 5–27% of the Patients on HAART that achieve plasma RNA Suppression which has clinical implication [35].

Patient Satisfaction

Patient satisfaction with health care reflects the quality of services from the patients' perspective. It can be used to predict treatment adherence and outcome.

Its dimensions range from medical care to interpersonal communication. Well recognized criteria include responsiveness, communication, attitude, clinical skills and comforting skills. Factors like socio-economic status, health status and the severity of illness influence satisfaction on services. The relationship between health care providers and patients has been reported to be the leading cause of patient dissatisfaction. A study done in rural Bangladesh to assess the degree of client satisfaction found that the most powerful indicator of client satisfaction is good interaction between provider and clients and reduced waiting time to get the service, 75% being satisfied. A study conducted in 2007 to assess the quality of ART service in Addis Ababa with special focus on clients' satisfaction and adherence showed 54.2 % of the clients were found to be satisfied with services of ART. In this study, lack of getting information about services in registration, examination, laboratory and dispensing rooms was the leading causes of dissatisfaction mentioned by clients, 14.2% [24, 25, 33 and 34].

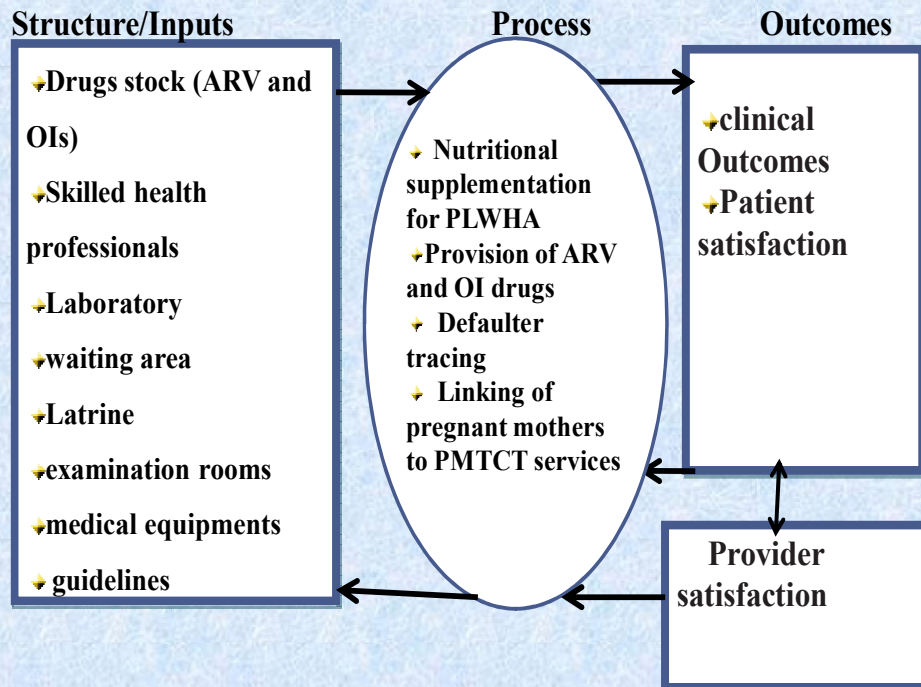


Figure 1. Conceptual framework on quality of care at ART clinic in Shashamanne Referral Hospital, Southern Ethiopia, October, 2013. (Adapted from Donabedian's health care quality model)

Chapter 3: Significance of the Study

HIV/AIDS is the main public health problem in almost all society of our globe. Despite worldwide strong effort to treat and control HIV/AIDS, there is still more reforms required to improve health status of people living with HIV. This is not only obtained by strict follow up of medical care but also through provision of comprehensive quality HIV/AIDS care and treatment services.

As a result, HIV/AIDS care and treatment will need to meet service demands primarily through provision of quality services.

Assessment of existing quality of service in ART clinic will provide health managers and professionals with useful information that could lead to reforms which encourage quality care in the health facilities. This changes lead to reduced mortality, morbidity, increased patient satisfaction and may generate important directions to be considered by health system managers and health care workers to provide quality care in ART clinics.

Therefore, this study may put some efforts on quality of HIV/AIDS care and treatment services provided at Shashamanne referral hospital.

Chapter 4: Objectives

4.1 General Objective

The general objective of this study is to assess quality of care at ART clinic in Shashamanne Referral Hospital, Oromia Regional State, South Ethiopia.

4.2 Specific Objectives

- To describe availability of required resources to carry out ART services.
- To assess structural aspect of ART clinic in Shashamanne Referral Hospital ART clinic.
- To assess compliance of HIV clinical care with national guidelines.
- To assess clinical outcomes of patients based on opportunistic infection.
- To determine patient satisfaction on services at ART clinic in Shashamanne Referral Hospital.

Chapter 5: Methods and Materials

5.1 Study Area and Period

The study was conducted at Shashamanne Referral Hospital from September 20 to October 30, 2013. Shashamanne Referral Hospital is one of the four referral hospital found in Oromia regional state and situated in Shashamanne city administration with purely *woina degga* agro ecology found at a distance of 250 km from Addis Ababa in the South direction of the country. Shashamanne Referral Hospital was established by Sudan Interior mission in 1944. At the then time it was mainly serving as TB/LEPROSY treatment and rehabilitation centre. The hospital transferred to governmental institution in 1969 after withdraw of missionaries. Following this, it has gone under many continuous reforms and now became a referral hospital with 165 beds. It is among three government hospitals found in the West Arsi zone. It serves as referral hospital for wide range of population from Bale, Arsi, part of East Shoa and SNNPRs. The hospital provides both curative and preventive services with 9 specialist, 14 GPs, 86 nurses, 26 other professionals and 135 support staffs [29]. Shashamanne Referral Hospital ART clinic started service with the support from International Centre for AIDS Care and treatment Programs in 2006. In March 2013, a total of 4523 patients were registered for HIV care, out of which 2706 (59.8%) started ART. Out of those patients who started ART, 1948 (72%) were reported as taking antiretroviral drugs actively in the hospital while the remaining 758 (28%) dropped from care, transferred out to other health facilities or died. The total number of male and female patients enrolled in chronic care and treatment is 1903(40%) and 2620(60%) respectively, out of which 415(10%) were under fifteen years of age. The ART clinic is staffed with one general practitioner and three nurses who took part in trainings on HIV/AIDS clinical care provision based on the national guideline [30].

5.2 Study Design

Cross-sectional study design with both quantitative and qualitative method was employed.

5.3 Population

5.3.1 Source Population

All people living with HIV who were enrolled to chronic HIV care and treatment, all medical records of HIV/AIDS patients, the ART clinic in the hospital and all health care providers in ART clinics of Shashamanne referral hospital were the source population.

5.3.2 Study population

Selected people living with HIV who were enrolled to chronic care and sampled complete medical records with at least two follow up entries before 6 months prior to data collection.

Antiretroviral therapy clinics, ART clinics's coordinator and health care providers in ART clinics of Shashamane referral hospital during the study period were the study population.

5.3.3 Inclusion and Exclusion Criteria

Inclusion Criteria

Medical records of patients with at least two follow up entries before six months prior to data collection (this period is the least possible time in which patients have at least two visits besides when the patients had two consecutive CD4 count as CD4 count is done every six months, time below six months doesn't provide enough information to be assessed; duration of stay in care for greater than six month is advisable since adequate information of the patients could be found).

Individuals who were 18 years old or older were included in exit interview.

Exclusion criteria

Patient who were seriously sick and mentally ill during the data collection period were excluded from the study.

Medical records of patients who were transferred in and stayed in the facility for less than 6 months were excluded since they transferred in with inadequate information.

5.4 Sample Size and Sampling Techniques

5.4.1. Sample size determination

Sample size was determined using single population proportion formula by considering the following assumptions: -

$$n_1 = (Z\alpha/2)^2 p (1-p) / d^2$$

$$n_1 = (1.96)^2 (0.5) (1-0.5) / (0.05)^2$$

$n_1 = 384$ medical records, since sampling was from finite population, N , (i.e. consists of less than 10,000 populations), the final sample size, n , was calculated by using finite population correction formula as follows:-

$$n = n_1 / (1 + n_1/N)$$

$$n = 384 / (1 + 384/4523)$$

$$n = 354 \text{ medical records}$$

Where: N , n_1 , and n were total, initial and final sample size respectively.

$P = 50\%$ (proportion of compliance of HIV care with guide lines, 50% was taken due to absence of reliable previous study that show compliance of HIV care with guide lines).

d = margin of error (0.05) with 95% confidence interval.

$Z_{\alpha/2} = 1.96$ (level of significance)

The sample size for exit interview was determined based on single population proportion formula by considering the following assumptions:-

$$n_1 = (Z_{\alpha/2})^2 p (1-p) / d^2$$

$$n_1 = (1.96)^2 (0.42) (1-0.42) / (0.05)^2$$

$n_1 = 374$ clients, since sampling was from finite population, N, (i.e. consists of less than 10,000 populations), the final sample size, n, was calculated by using finite population correction formula as follows:-

$$n = n_1 / (1 + n_1 / N)$$

$$n = 374 / (1 + 374 / 450)$$

n=204 clients and data were collected consecutively to attain the final sample size (204).

Where: N, n_1 , and n were last year patient flow in month of October, initial and final sample size respectively.

P =42% (the proportion of patients who satisfied with services at ART clinic) [24].

d = margin of error (0.05) with 95% confidence interval.

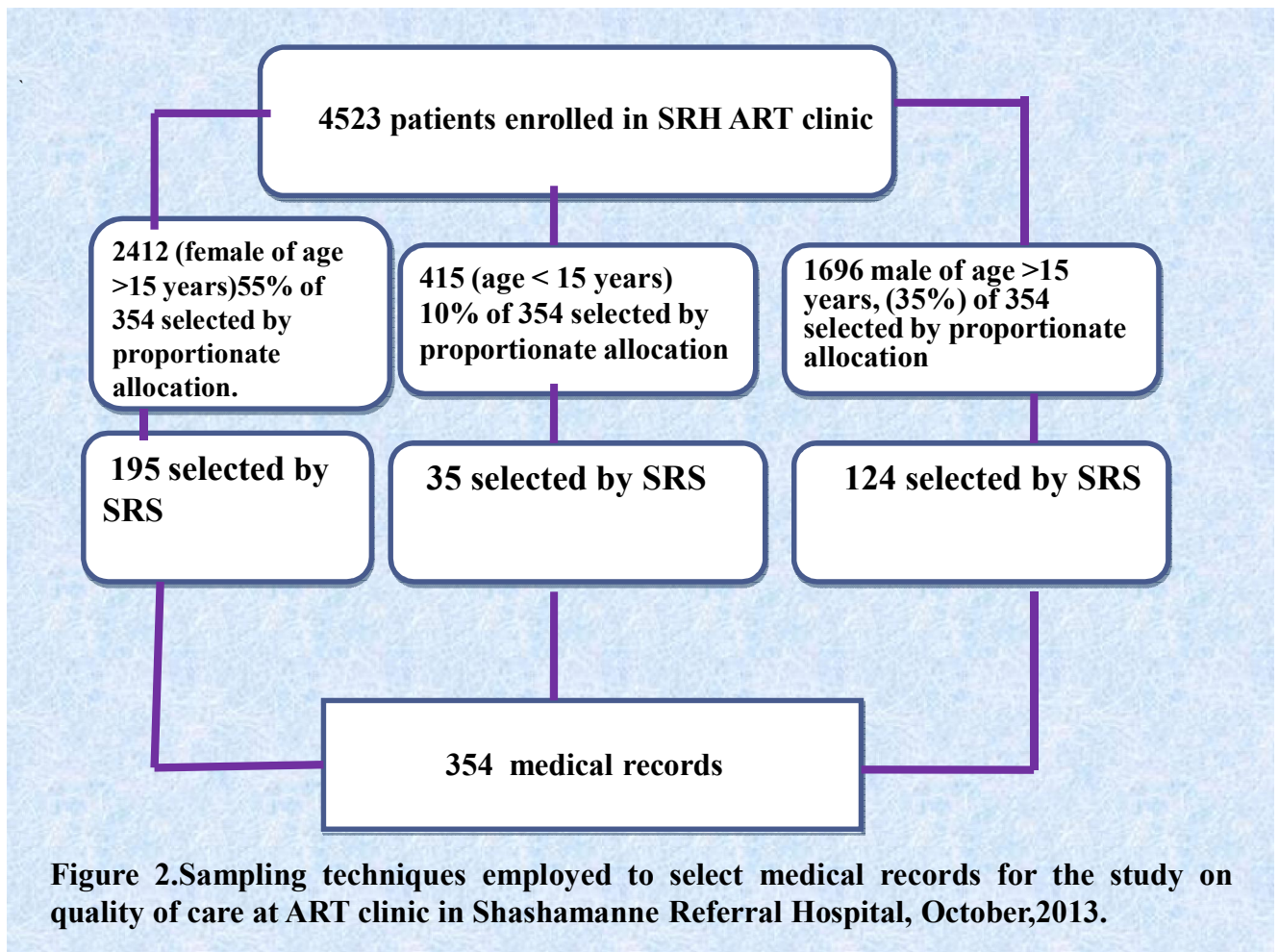
$Z_{\alpha/2} = 1.96$ (level of significance)

For the in-depth interview three service providers from ART clinics, one pharmacist from ART pharmacy and one data clerk were interviewed.

For resource inventory one ART clinic coordinator was considered and ART clinics were observed for structural aspect of the service.

5.4.2. Sampling Techniques

Stratified sampling technique was employed for medical records review using age and sex as stratifying variables to include all categories proportionally. There were 4523 patients enrolled in chronic care of which 55% and 35 % of the total source population were female and male of age greater than fifteen years respectively. Children under 15 years constitute 10%, of which female and male 5% each. Then sampling frame was prepared for each stratum considering age and sex characteristics. Female age greater than fifteen years, male age greater than fifteen years and Children less than 15 years regardless of sex were the strata and each of the strata was included in the study. The number of study unit from every stratum was determined by proportionate allocation to size and simple random sampling (computer generated numbers) technique was employed to select study subjects as shown in the figure below.



Interviewees were selected by consecutive sampling method at exit from ART clinic to assess their satisfaction on services till required sample size is achieved. To increase representativeness of exit interview it was collected on different days and at different time of the day (morning and afternoon), over a time period of 2 weeks, from a mixture of male and female and from patients of different age [27]. For the in depth interview purposive sampling technique was employed to select ART clinics, ART pharmacy and data clerk department. Then service providers in those selected department who were available during data collection time were interviewed until the required data obtained. For resource inventory purposive sampling was employed to select a coordinator of ART clinics for available resource assessment and ART clinics were also purposively selected to observe structural aspects of the services like availability of latrine and medical equipments.

5.5 Data Collection Techniques and Instrument

5.5.1 Data collection instrument

Quantitative data was collected using organized observational, resource inventory and medical records review checklists which were developed after reviewing relevant literatures and similar studies [33, 34].

The checklists were used for observation of ART site; to assess available resources needed to carry out ART services and to review medical records for assessment of compliance of HIV care with national guidelines respectively. Structured interviewer administered questionnaire which was adapted with some modification from the HIVQUAL project of New York State Department of Health AIDS Institute also used to gather quantitative data to assess patients' perception on provided services [26]. Additionally, semi structured interview guide was used to assess providers view on services.

5.5.2 Data collection techniques

A structured checklists and interviewer administered structured questionnaire were used to gather quantitative data on required resources to run ART service, compliance of HIV care with national guidelines, and clients' perception on provided services. In-depth interview was also conducted with health workers to assess their perspective on provided services. Data were collected by four diploma nurses and one supervisor who were not members of hospital staffs. Confidentiality issues were well described to those who involved in exit interview. For in depth interview, semi structured interview guide was prepared and the interviews was conducted by the principal investigator. The interviews was tape recorded and note was taken by the investigator and one supervisor to catch the discussion points after obtaining their consent. The interview was held in quit and comfortable place.

5.5.3. Study Variables

Dependent variable

- Clinical outcomes
- Patient Satisfaction

Independent variables are classified as socio-demographic, input and process variables.

Socio-demographic variables

- Age
- Sex
- Educational status

- Ethnicity
- Marital status
- Occupation status
- Residence
- Religion

Input variables

- Trained health workers
- Medical equipments
- Guidelines and formats.
- Latrine and waiting area.
- Stock of ARV and OIs drugs.

Process variables

- Provision of ARV and OIs drugs in line with national guideline.
- Linking of pregnant mothers on ART to PMTCT service.
- Nutritional supplementation for PLWHA.
- Defaulter tracing.

5.6 Data Analysis

For quantitative data (medical record review and exit interview), after data collection, it was checked for completeness and code was given before data entry. Data were entered, cleaned for outliers, missed values and analyzed using SPSS version 20 statistical package. Different frequency tables, graphs and descriptive summaries were used to describe the study variables. Chi-square and cross tabulation tests were performed to see existence of association between dependent and independent variables. Binary Logistic regression was performed to assess the strength of association between some selected independent input and process variables with the outcome variables. Then those variables with P-value <0.25 were included in multivariate logistic regressions. Finally only those independent variables that maintain their association with outcome variables in multivariate logistic regressions were used to construct the final models to identify the most significant predictor of clinical outcomes and patients' satisfaction. Crude and adjusted ORs and 95% CI were used to interpret the findings. P-values <0.05 were considered statistically significant to identify important determinant and predictive variables. In depth interview, data were transcribed word by word into the local language and translated into English

language. Then responses were grouped under thematic areas and results of the qualitative study were presented by integrating with the quantitative results.

5.7 Data Quality Management

To ensure the quality of data to be gathered from the study subjects a range of mechanisms were employed to address major areas of bias introduction during the data collection process. First, check lists and questionnaires were pre- tested by taking 5% of the sample size at Adama Referral Hospital and necessary modification was made based on the nature of gaps identified. Two days training was given for data Collectors on procedures of data collection techniques and data collection tool. The whole contents of the questionnaire and check list were discussed to enable data Collectors to gather appropriate information. Data were collected by diploma nurses who were fluent in speaking Afan Oromo and Amharic, using structured questionnaires adapted from the HIVQUAL project of New York State Department of Health AIDS Institute which were translated to Afan Oromo while check lists were prepared in English.

A day to day on site supervision was carried out during the entire period of data collection by principal investigator. At the end of each day, the questionnaires were checked for completeness, accuracy and consistency by investigator. Data were cleaned and edited after it was entered in to the SPSS soft ware.

5.8 Operational Definitions

1. Inventory of resources: assessing for presence of required resources to carry out ART service.
2. Compliance with guidelines: provision of the service in line with the national guide lines. It was determined by comparing care provided to patients like HAART initiation with number of CD4 count and WHO clinical staging.
3. Linking of pregnant mothers to PMTCT service: referring HIV positive pregnant mothers to maternal and child health unit who were previously on chronic care and became pregnant while on follow up.
4. Nutritional supplementation: whether patients received therapeutic food or not. It was determined by calculating BMI to decide nutritional status (well nourished or malnourished). BMI < 18.5 malnourished, BMI > 18.5 is normal [22].
5. Defaulter tracing mechanism: ways of regaining patients not seen for a period greater than a month since last appointment date. It was checked by looking for presence of his/her and parent's full address in medical records.

6. Immunological improvement: Absences of 50% fall in CD4 count from on treatment peak value and persistence of CD4 count to < 100 cells/mm³ for long duration [4, 11].
7. Clinical progress: improvement in functional status from bed ridden or ambulatory to working [4, 11].
8. Patient satisfaction: concerned with patients perception on provided services. Respondents were asked for relationship with care provider, suitability of physical environment, absence of communication barriers, time management, affordability of services, patient involvement in decision making and responsiveness.
9. Loss to follow up: Never seen in care since period of 1 month or above but not greater than three months [4].
10. WHO clinical stage: Stage given for patients based on disease s/he developed after HIV infection.
 - Stage one: Asymptomatic clients(free from any disease signs and symptoms)
 - Stage two: Clients with minor mucocutaneous manifestations(itching and pruritis)
 - Stage three: Clients with AIDS defining illness like TB.
 - Stage four: Clients who experienced advanced immunosuppression like CD4 count < 50 cells/mm³.
11. Active TB: Disease stage of mycobacterium tuberculosis infection diagnosed by health care provider.
12. D4T/3TC/NVP: Fixed dose combination of Stavudine, Lamvudin and Nevarapine first line ARV drugs.
13. D4T/3TC/EFV: Fixed dose combination of Stavudine, Lamvudin and Efavirenz first line ARV drugs.
14. ABC/DDI/LPV: second line ARV regimen containing Abacavir, Dedanosine and Lopnavir.
15. TDF/3TC/LPV: second line ARV regimen containing Tenofovir, Lamvudin and Lopnavir.

5.9 Ethical Considerations

Prior to data collection appropriate ethical clearance was obtained from the ethical clearance committee of the Jimma University College of Public Health & Medical Sciences. Thereafter, Letter of permission was obtained from Shashamane Referral Hospital. Study participants who took part in interview were patients with age greater than 18 years who were capable to decide about themselves independently. They were made free choices and decision without any interference to participate in the study. Subjects were participated in the study after adequate

information provided to them concerning importance of the study, compensation and Confidentiality was also assured for the information provided since the name of the information provider was not stated on the questionnaire rather coding system was applied. Verbal consent was also requested from every study participant included in the study just before data collection after explaining the objectives of the study. Any risks to participants were avoided as much as possible and appropriate compensation was paid for them for time sacrificed during interview. Above all, they were told as the first beneficiary of this study finding might be Shashamanne Referral Hospital patients who enrolled to chronic care at ART clinic. Participants of this research were those selected based on the inclusion criteria and all participants were treated in a fair way to distribute risk and benefit equally among them.

5.10 Dissemination of the study result

The findings of this study will be presented to Jimma University scientific community and submitted to the department of Health Services Management and college of public health and medical sciences. After approval by the department, the findings will also be communicated to Shashamanne Hospital managers and other relevant stakeholders at woreda and zonal level in the area to enable them take recommendations in to consideration during their planning process. It can also be communicated to health planners and managers at regional level. Publication in peer reviewed, national or international journals will also be considered.

Chapter 6: Results

6.1 Socio demographic status of clients from records review

A total of 354 medical records were reviewed from September 20 to October 30, 2013. The age of the clients ranged from 8 to 70 years and the median age was 31 years. Two hundred eleven (60%) of the clients were females. One hundred eight three (51.7%) clients were Orthodox Christian, and 290(81.9%) patients reside in urban areas. One hundred thirty (36.7%) of clients were able to read and write only, and 123(34.7%) were at high school level. One hundred sixty (45.2%) of clients were self employees followed by house wives, 73(20.6%). One hundred eight two (51.4%) of clients were married (Table1).

Table 1.Socio-demographic characteristics of HIV/AIDS clients in Shashamanne Referral hospital, South Ethiopia, 2013 ;(n=354).

Variables	Frequency	percent
Age in year		
5_14	35	9.9
15_24	25	7.1
25_34	155	43.8
35_44	101	28.5
>45	38	10.7
Sex		
Male	143	40
Female	211	60
Religion		
Orthodox	183	51.7
Protestant	86	24.3
Islam	79	22.3
Catholic	6	1.7
Ethnicity		
Oromo	175	49.4
Amhara	105	29.7
Wolaita	36	10.2
Tigre	19	5.4
Sidama	17	4.8
Others	2	0.6

Table 1 (continued): Socio-demographic characteristics of HIV/AIDS clients in Shashamanne Referral hospital, South Ethiopia, 2013 ;(n=354).

Variables	Frequency	percent
Educational status		
Primary	130	36.7
High school	123	34.7
No education	74	20.9
Tertiary level	27	7.6
Residence		
Urban	290	82
Rural	64	18
Occupational status		
Farmer	160	45.2
House wife	73	20.6
Self employee	53	15
Employed	40	11.3
Student	27	7.6
Others	1	0.3
Marital status		
Married	182	51.4
Single	98	27.7
Separated	43	12.1
Widow/widower	30	8.5
Divorced	1	0.3

6.2 HIV Status of Spouses and Children

Out of 195 females whose age is greater than 15 years, 51(26.2%) of them were ever pregnant after enrollment to HIV care. Of those who became pregnant, 34 (66.7%) of them were linked to PMTCT service. From 225(63.6%) married and separated spouses 176(78.2%), 36(16%) and 13(5.8%) of them reported that their spouses were tested, did not know either tested or not, and not tested for HIV, respectively. Out of those whose spouses were tested for HIV, 159(90.3%) were positive for HIV. Two hundred ten (59.3%) of clients had their own biological children that were 495 in number who were less than 18 years of age. Among those children, 353(71.3%) of them were tested for HIV. Out of those children who were tested for HIV, 64(18.1%) were positive for HIV (Table 2).

Table 2: HIV Status of Spouses and Children in Shashamanne Referral hospital, South Ethiopia, 2013 ;(n=354)

Variables	Frequency	Percent
Ever become pregnant after enrollment to HIV care (n=195).		
Yes	51	26.2
No	144	73.8
Ever linked to PMTCT services after pregnancy (51)		
Yes	34	66.7
No	17	33.3
Spouse tested for HIV (n=225)		
Yes	176	78.2
No	13	5.8
I don't know	36	16
HIV status of spouse (n=176).		
Positive	159	90.3
Negative	17	9.7
Does client's have his/her own children (n=354).		
Yes	210	59.3
No	144	40.7
Number of children (n=495).		
1	52	24.8
2	81	38.6
3	47	22.4
4	18	8.6
5	6	2.9
6	4	1.9
7	2	1.0
Number of children tested for HIV (n=353)		
1	59	28.1
2	70	33.3
3	38	18.1
4	6	2.9
5	2	1.0
6	1	5
Number of children tested for HIV Positive (n=64)		
1	44	21.0
2	10	4.8

6.3 Clinical condition of clients

One hundred seventeen (33.1%), 134(37.9%), 99(28%) and 4(1.1%) were on WHO clinical stage one, two, three and four respectively at the time of enrollment. Two hundred sixty three (74.3%) of clients were eligible and all of them were on ART. Majority of clients eligibility criteria was determined based on CD4 count for 164(62.4%), CD4 count and WHO clinical stage for 92(35%) clients. The commonest original regimens for those eligible clients were D4T/3TC/NVP for 95(36.1%) and D4T/3TC/EFV for 40 (15.2%). Out of those original regimens later on 119 (45.2%) clients were substituted their drugs. The major reason for substitution was toxicity in 52.1% of cases. Nineteen (7.2%) clients were on the second line regimen. The leading reason for switch to the second line regimen was immunological failure, 84.2%. Of those clients who were on second line regimen 68.4% of them were on ‘ABC/DDI/LPV’ and 31.6% of them were on ‘TDF/3TC/LPV’. Concerning contact information, 190(53.7%) of clients gave their own and relatives full address (Table 3).

Table 3: Clinical condition of clients at ART clinic in Shashamane Referral Hospital, South, Ethiopia, 2013 ;(n=354)

Variables	Frequency	Percent
WHO stage at the time of enrollment to HIV care		
2	134	37.9
1	117	33
3	99	28.0
4	4	1.1
Patient eligible for ART		
Yes	263	74.3
No	91	25.7
Eligibility criteria		
WHO stage	7	2.7
CD4 count	164	62.4
WHO & CD4 count	92	35

Table 3 (continued): Clinical condition of clients at ART clinic in Shashamanne Referral Hospital, South, Ethiopia, 2013 ;(n=354).

Variables	Frequency	Percent
Original regimen		
D4T/3TC/NVP	95	36.1
D4T/3TC/EFV	40	15.2
AZT/3TC/NVP	25	9.5
AZT/3TC/EFV	21	8.0
TDF/3TC/NVP	58	22.1
TDF/3TC/EFV	22	8.4
Others	2	.8
Substitution to original regimen		
Yes	119	45.2
No	144	54.8
Reason for substitution		
Toxicity	62	52.1
Pregnancy	7	5.9
New TB	4	3.4
No entry	17	14.3
Others	29	24.4
Switch to 2nd line regimen		
Yes	19	7.2
No	244	92.8
Reason for shift		
Immunological failure	16	84.2
Both clinical and immunological failure	3	15.8
First 2nd line regimen		
ABC/DDI/LPV	13	68.4
TDF/3TC/LPV	6	31.6
Clients gave their own and relatives full address		
Yes	190	53.7
No	164	46.3

6.4 Prophylaxis and OIs condition of clients on HIV/AIDS care and treatment.

Two hundred and eighty (79.1%) clients were eligible for cotrimoxazole preventive therapy (CPT). Of those clients who were eligible for cotrimoxazole preventive therapy all of them were initiated cotrimoxazole. Among clients who were on cotrimoxazole, 101(36.1%) of them were stopped or finished cotrimoxazole while 179(63.9%) of them were on cotrimoxazole. Three hundred forty nine (98.6%) of clients were eligible for isoniazid preventive therapy (IPT) based on negative entry for TB screening. Of those eligible clients 149(42.7%) of them had taken isoniazid and all of those who had taken INH had finished or stopped the INH. Fifty eight (16.4%) of clients developed active TB; of which 40(69%) was extra pulmonary TB (Table 4).

Table 4: Prophylaxis and OIs condition of clients at ART clinic in Shashamanne Referral Hospital, South, Ethiopia, 2013 ;(n=354).

Variable	Frequency	percent
Clients eligible for Cotrimoxazole		
Yes	280	79.1
No	74	20.9
Cotrimoxazole initiated (n=280)		
Yes	280	100.0
No	0	0
Stopped or finished Cotrimoxazole (n=280)		
Yes	101	36.1
No	179	63.9
Result of last entry for TB screening)		
Positive	5	1.4
Negative	349	98.6
Patients eligible for INH		
Yes	349	98.6
No	5	1.4
Patients taking/have taken INH (n=349)		
Yes	149	42.7
No	200	57.3
Stopped or finished INH (n=149)		
Yes	149	100.0
No	0	0.0
Patient diagnosed for TB before or after starting ART		
Yes	58	16.4
No	296	83.6

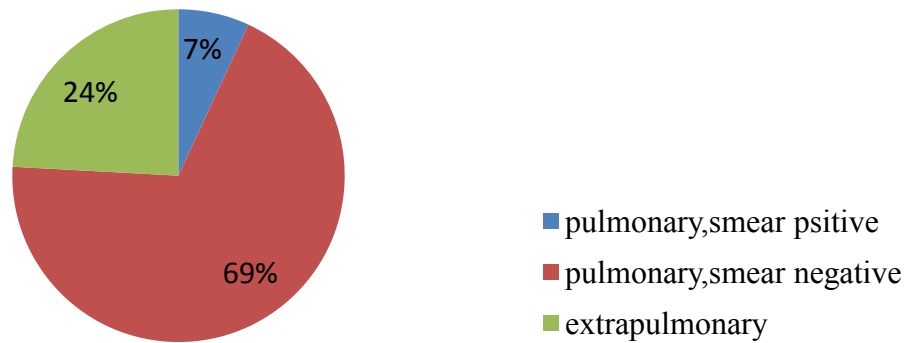


Fig.3 percentage distribution of types of TB among clients at ART clinic in Shashamanne referral hospital, south Ethiopia, 2013; (n=58)

Table 5. Cross tabulation of patient diagnosed for TB before or after starting ART who were taking/have taken INH

		patient diagnosed for TB before or after starting ART		Total
		yes	no	
patient taking/have taken INH	yes	4	145	149
	no	50	150	200
Total		54	295	349

6.5 Nutritional Status of Clients

Majority of clients' body mass index (BMI) was greater than eighteen and half (272(76.8%)) followed by those whose BMI was less than eighteen and half (47(13.3%)) and BMI cannot be determined for 35(9.9%) of clients. Of those clients whose BMI < 18.5, only 10.6% of them were provided ready to use therapeutic food (Table 6).

Table 6: Nutritional status of Clients at ART clinic in Shashamane Referral Hospital, South, Ethiopia, 2013 ;(n=354)

Variables	Frequency	Percent
BMI of the clients (n=354)		
<18.5	47	13.3
>18.5	272	76.8
Cannot be determined	35	9.9
RUTF given to patients (n=47)		
Yes	5	10.6
No	42	89.4

6.6.1 Socio demographic characteristics of exit interview participants on satisfaction with ART services at Shashamane Referral Hospital, 2013; South Ethiopia.

A total of 204 clients were participated in exit interview. The median age of those clients was found to be 37 years. The minimum and maximum age was 19 and 62 years respectively. One hundred nine (53.4%) clients were females. Majority of clients were married (122(59.8%)). Oromo was the popular ethnic group (92(45.1%)), followed by Amhara (68(33.4%)).

The dominant religion was Orthodox (115(56.4%)) and Protestant (51(25%)). One hundred eight three (89.7%) clients were residing in urban areas. Eighty (39.2%) of clients were only able to read and write, and high school (75(36.8%)). Most of clients were self employee (130(63.7%)), and employees in either governmental or nongovernmental institutions constitute 12.3%. Ninety nine (48.5%) clients stayed in care for 3 to 5 years, while 53(26%) stayed in care for duration of greater than five years (Table 7).

Table 7: Socio demographic characteristics of exit interview participants on satisfaction with ART services at Shashamanne Referral Hospital, 2013; South Ethiopia, (n=204).

Variables	Frequency	Percent
Age group		
15-24	10	4.9
25-34	67	32.8
35-44	82	40.2
>45	45	22.1
Sex		
Male	95	47
Female	109	53
Marital status		
Married	122	59.8
Single	27	13.2
Separated	13	6.4
Widow	42	20.6
Religion		
Orthodox	115	56.4
Protestant	51	25
Islam	36	17.6
Others	2	1
Residence		
Urban	183	89.7
Rural	21	10.3
Educational status		
Primary	80	39.2
High school	75	36.8
Tertiary level	26	12.7
No education	23	11.3
Occupational status		
Self employee	130	63.7
Employed	25	12.3
Farmer	24	11.8
House wife	21	10.3
Student	4	2.0

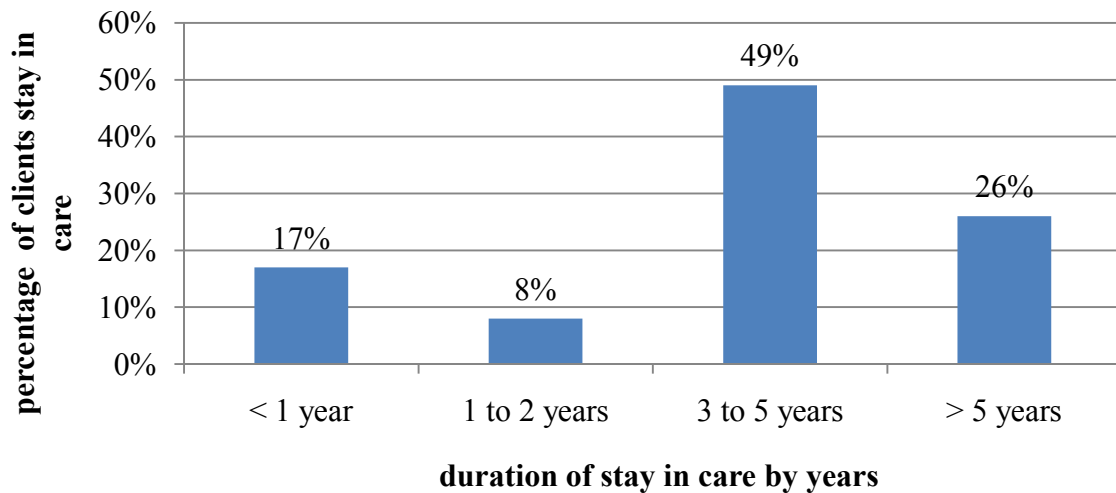


Fig.4 Percentage distribution of duration of clients stay in care at ART clinic in shashamanne referral hospital, October, 2013; (n=204).

6.6.2 Clients satisfaction on availability of resource

On five point Likert's scale analysis 60.8% of clients responded that they were satisfied on availability of HIV specific materials to read, followed by dissatisfied 55(27%), no response 17(8.3%) and strongly satisfied 8(3.9%). The mode score for patient satisfaction on availability of resource at ART clinic on HIV/AIDS specific materials to read was 3. A 25 years female nurse said "for example, many of our clients are on NVP containing regimen but we don't have functional chemistry machine to monitor their liver function. Similarly, absence of functional hematology machine also another challenge to monitor Hgb level of patients on AZT containing regimen and to start AZT based drug combination. We totally stopped to initiate AZT containing ARV drugs because our hematology machine is not functional for a long period of time."

6.6.3 Providers-patient interaction

Most of the clients (98%) neither satisfied nor dissatisfied on getting providers on phone to discuss together if they had any medical questions and (7(3.4%)) clients responded that they dissatisfied on it. Mode score of clients' satisfaction on getting care providers on phone to discuss if they had medical questions was 2. Concerning satisfaction on health workers greeting when clients checked in for medical care, 175(85.8%) clients were satisfied on it. One hundred thirty three (65.2%) clients responded that they were satisfied on their involvement to make decision about their health care. The mode score of clients' satisfaction in involvement on making decision about their health care was 3. Majority of clients interviewed, (141(69.1%)) of them were satisfied on their care providers attentions if they had medical complaint. Satisfaction mode score on care providers' attentions when clients had medical complaint was 3. One hundred twenty (58.8%) clients responded that they could easily understand answers given to

them when they ask questions on HIV care and satisfied on it. Mode satisfaction score on clients understanding answers provided by health workers to their questions about HIV care was 3 (Table 8).

Table 8: Providers-patient interaction characteristics at Shashamanne Referral Hospital, 2013; South Ethiopia, (n=204).

Variables	Frequency	Percent
Providers greet clients		
Strongly dissatisfied	1	0.5
Dissatisfied	18	8.8
Satisfied	175	85.8
Strongly satisfied	10	4.9
I could get providers on phone to discuss with me		
Dissatisfied	7	3.4
No response	190	93.1
Satisfied	7	3.4
I involved in decision about my health care		
Dissatisfied	28	13.7
No response	40	19.6
Satisfied	133	62.5
Strongly satisfied	3	1.5
Providers ignore my medical complaint		
Dissatisfied	20	9.8
No response	31	15.2
Satisfied	141	69.1
Strongly satisfied	12	5.9
I hardly understand my providers' answers on HIV		
Dissatisfied	11	5.4
No response	73	35.8
Satisfied	120	58.8

6.6.4 Accommodation and time Management

Majority of clients (200 (98%)) were dissatisfied on reaching to care providers on off hours, weekends and holidays. Mode score on satisfaction of services provided on weekend and holidays was 1. A 25 years female nurse said that “Since all health professionals are voluntary to give services on weekend and holidays, hospital administrative and other concerned bodies are required to discuss each other to arrange payment mechanisms for health workers who give services on weekend and holidays as only absence of service fee for health workers is an obstacle to provide services on off hours.” On total length of stay at ART clinic, 157(77%) clients were

strongly dissatisfied, and mode satisfaction score on duration of stay was 0 which is the lowest value correspondence to strong dissatisfaction on Likert's scale. Majority of clients (132(64.7%)) were stayed for duration greater than 61 minutes from arrival to receiving medical records. On waiting time for consultation after receiving medical record, 180(88.2%) clients were staying for periods less than 15 minutes. One hundred twenty five (61.3%) clients responded as they have been stayed for a total period of greater than 121 minutes from arrival till completion of medical consultation (Table 9).

Table 9: Waiting time for services at ART clinic in Shashamanne referral hospital, 2013; South, Ethiopia (n=204).

Variables	Frequency	Percent
Waiting time for receiving medical record		
< 15 minutes	14	6.9
16-30 minutes	32	15.7
31-60 minutes	26	12.7
> 61 minutes	132	64.7
Waiting time for consultation		
< 15 minutes	180	88.2
16-30 minutes	23	11.3
31-60 minutes	0	0
> 61 minutes	1	0.5
Total waiting time in clinic		
< 30 minutes	14	6.9
31-60 minutes	32	15.7
61-120 minutes	33	16.2
> 121 minutes	125	61.3



Fig.5 frequency distribution of clients satisfaction on total length of stay from arrival to consultation at ART clinic in Shashamanne referral hospital,2013;(n=204).

6.6.5 Affordability of care at ART clinic

Majority of clients (173(84.8%)) were satisfied on medical care costs at ART clinic. Mode satisfaction score on medical care costs at ART clinic was 3 (Table 10).

A 34 years male physician stated that “Costs such as admission cost, some laboratory tests cost, ultra sound and OIs drugs are among some of unaffordable services in ART clinic for majority of the clients.”

Table 10: Affordability of care at ART clinic in Shashamane Referral Hospital, 2013; South Ethiopia, (n=204).

Variables	Frequency	Percent
I did get the medical care I needed because I could pay for it		
Dissatisfied	25	12.3
No response	1	0.5
Satisfied	173	84.8
Strongly satisfied	5	2.5

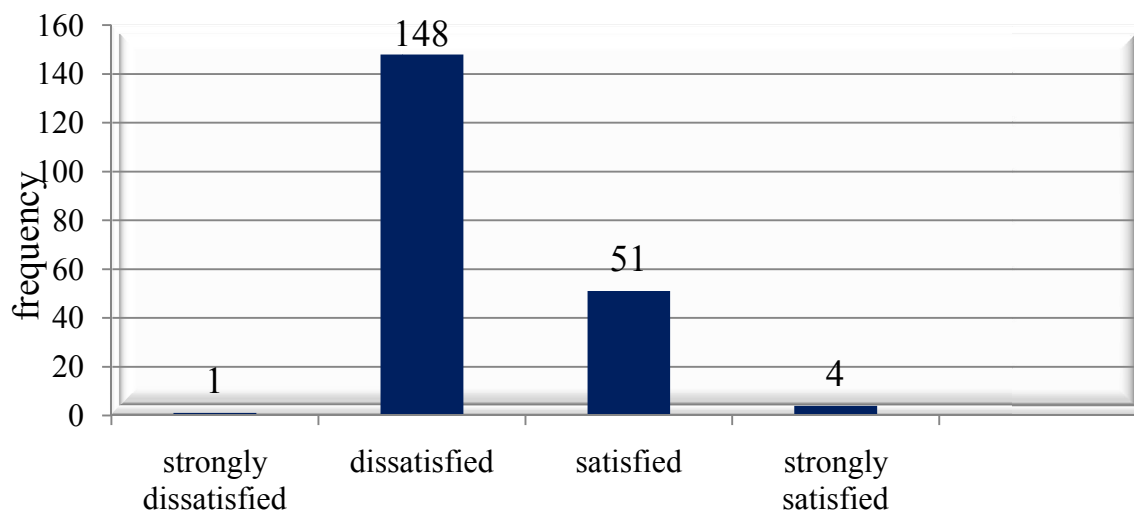
6.6.6 Overall Perceived quality of care at ART clinic

One hundred forty eight (72.5%) of clients were dissatisfied on knowing what meant results of laboratory tests such as CD4 count for their health. Mode satisfaction score on understanding what meant results of laboratory tests such as CD4 count for their health was 1. Concerning satisfaction on explanation of care providers about side effects of HIV medication, 188(92.2%) clients were satisfied on it. Mode satisfaction score on this was 3. One hundred twelve (54.9%) clients were satisfied on providers suggested ways to help them to remember to take their HIV medication and its mode satisfaction score was 3. One hundred sixty six (81.4%) clients were satisfied on their providers’ explanations how to avoid getting sick and its mode score was 3.

On overall perceived quality of care at ART clinic in comparison with other ART clinics they knew, 85(41.7%) clients were rated as good , 15(7.4%) as poor (Table 11).

Table 11: Overall perceived quality of care at ART clinic in Shashamanne referral hospital, 2013; South, Ethiopia (n=204).

Variables	Frequency	Percent
Providers explained side effects of my HIV medications		
Dissatisfied	15	7.4
No response	1	0.5
Satisfied	188	92.2
Providers suggested ways to take my HIV medications		
No response	83	40.7
Dissatisfied	1	0.5
Satisfied	112	54.9
Strongly Satisfied	8	3.9
Providers explained to me how to avoid getting sick		
Dissatisfied	30	14.7
Satisfied	166	81.4
Strongly Satisfied	8	3.9
I would rate the quality of care at this clinic as		
Poor	15	7.4
Good	85	41.7
Better	100	49.0
Best	4	2.0



Level of satisfaction on information about laboratory results

Fig.6 frequency distribution of clients satisfaction on providers efforts to make them understand what laboratory results such as CD4 count meant for their health,Shashamanne referral hospital,Oct.2013;(n=204)

6.7. Result of Resource Inventory

HIV/AIDS care in Shashamane Referral Hospital is provided in a separate clinic. The ART clinic is staffed with one pharmacist, one general practitioner and three nurses who took part in comprehensive trainings on HIV/AIDS care provision based on the national guideline.

The ART clinic uses laboratory services from only one central hospital laboratory. It provides routine laboratory tests, including HIV testing, HCG for pregnancy test, microscopy for TB diagnosis, and stool examination. For other HIV/AIDS related laboratory tests including CD4 count, LFT, RFT, and hematology analysis are also done in this laboratory. For two months period prior and during data collection, the CD4 machine has broken, hematology, and chemistry machine were non functional for greater than a year before and during data collection.

The hospital's drug store has scarcity of TDF+3TC stock of adult combination for 8 weeks prior and during data collection, according to information obtained from ART coordinator using resource inventory check list. But the drug supply was not interrupted in the dispensing unit as reported by 32 years male ART pharmacist "we give strong focus on ensuring continuity of patients treatment, every of them supplied with drugs for a time less than a month to enable all of them to collect their drugs evenly, we borrow ARV drugs from other hospitals and health centers and also by contacting with pharmaceutical fund and supply agency (PFSA) other means of getting ARV drugs exhausted as much as possible."

Stock out of INH occurred in the past one year and during the data collection period.

6.8. Observational Results

The waiting area for ART clinic is free from wastes and well ventilated but there were only four chairs for a number of patients present that can be overcrowded especially on health education sessions given by expert patients and care providers. However, ART rooms have 3 chairs, a desk, medical equipments and examination coach which are in line with national standard.

There is no separate laboratory and latrine for ART clinic. But there is separate pharmacy and functional telephone at data clerk rooms and ART pharmacy which mainly used for tracing of patients following loss to follow up.

Computers used at data clerk department and ART pharmacy though it was not used in ART clinic to register patient information on the day of medical care.

TB clinic located at a distance < 10m from ART clinic and this can pose HIV/AIDS patients at high risk of acquiring TB infection. A 32 years male ART pharmacist stated that "Patients who are served in ART clinic are at high risk of acquiring various infections specially TB including

multi-drug resistant tuberculosis; no means of separating suspects of TB in place so that all patients wait for their services in similar ways and that will put both patients and care providers at high risk of acquiring TB even multi-drug resistant TB.”

6.9 Variables associated with Overall perceived quality of care rated by clients on Bivariate Analysis.

Clients who were satisfied on total length of stay at clinic more likely rated the overall quality of care as good than clients who dissatisfied on total length of stay at clinic (COR 11.6, [95% CI 7_20])(Table12).

Table12: Associations of time variable and overall perceived quality of care at ART clinic in Shashamanne referral hospital, South Ethiopia, 2013.

Variable	Overall perceived quality of care		odds ratio (95% CI)
	Poor	good	
What I feel with total length of stay in clinic			
Satisfied	1(3.6%)	27(96.4%)	11.6(7_20)*
Dissatisfied	14(8%)	162(92%)	1

*=Statistically significant (p<0.05)

Those clients who were dissatisfied on availability of HIV-specific educational materials, more likely rated the overall quality of care as poor than clients who were satisfied on availability of HIV-specific educational materials (COR 7, [95% CI 3.5_14]). (Table13)

Table13: Associations of resource availability variables and Overall perceived quality of care at ART clinic in Shashamanne referral hospital, South Ethiopia, 2013.

Variable	Overall quality of care		odds ratio (95% CI)
	Poor	good	
HIV educational materials available			
Satisfied	6(4.5%)	126(95.5%)	1
Dissatisfied	9(12.5%)	63(87.5%)	7(3.5_14)*

*=Statistically significant (p<0.05)

6.10 Variables associated with Overall perceived quality of care rated by clients on Multivariate Analysis.

Place of residence, age and availability of resource were the most significant and consistent predictors for overall quality of care at multivariate level. Clients who lived in rural were more likely satisfied on quality of care than those clients who lived in the urban (AOR 11, [95% CI (6_21)]). Similarly clients whose ages 25_34 years were less likely satisfied on quality of care than clients whose ages 35_44 years (AOR 0.04, [95% CI (0.02_0.25)]). clients who were

dissatisfied on availability of HIV-specific educational materials, less likely rated the overall perceived quality of care as good than clients who were satisfied on availability of HIV-specific educational materials (AOR 0.2 (95% CI 0.33_0.7)) (Table 14).

Table14: Final predictors of overall perceived quality of care among clients in Shashamanne referral hospital, south Ethiopia; 2013.

Variables	Overall perceived quality of care		Adjusted OR (95% CI)
	Poor	Good	
Age in year			
25_34	9(13.4%)	58(86.6%)	0.04(0.2_0.25)*
35_44	6(7.3%)	76(92.7%)	1
> 45	0(0%)	45(100%)	1.3(0.9_1.2)
Sex			
Male	11(11.6%)	84(88.4%)	2.1(0.34_1.3)
Female	4(3.7%)	105(96.3%)	1
Residence			
Urban	14(7.7%)	169(92.3%)	1
Rural	1(4.8%)	20(95.2%)	11(6_21)*
Educational status			
Primary	6(7.5%)	74(92.5%)	1
High school	6(8%)	69(92%)	1.1(0.2_5.7)
Tertiary	3(11.5%)	23(88.5%)	4.2 (.12_1.65)
Duration of stay in care			
1 to 2 years	2(11.8%)	15(88.2%)	5(0.25_10.7)
3 to 5 years	7(7.1%)	92(92.9%)	1
>5 years	5(9.4%)	48(90.6%)	3.8(.68_2.7)
HIV educational materials available			
Satisfied	6(4.5%)	126(95.5%)	1
Dissatisfied	9 (12.5%)	63(87.5%)	0.2(0.33_0.7)*
Staffs friendly greet me			
Satisfied	9(4.9%)	176(95.1%)	1
Dissatisfied	6(31.6%)	13(68.4%)	0.24(0.39_1.52)

*=Statistically significant (p<0.05)

Chapter 7: Discussions

Thirty three percent of mothers who became pregnant while on care and treatment were not linked to PMTCT service. This finding was below the national standard which is 100% to be linked to PMTCT services following pregnancy [6, 20]. The possible cause for this might be loss to follow up immediately after pregnancy, poor tracing of defaulters, inadequate information on pregnancy and HIV and fear of care providers as well since they were counseled not to be pregnant without informing their care providers ahead of pregnancy.

Only seventy one percent of children tested for HIV as opposed to Ethiopian national guide line for prevention of mother to child transmission that encourage every children from HIV infected families needs to be tested for HIV [6]. The possible cause for this gap might be fear of disclosure, stigma and discrimination, lack of awareness and inaccessibility to health facilities where children counseled and tested for HIV infection.

From those 354 clients 33.1%, 37.9%, 28% and 1.1% were on WHO clinical stage one, two, three and four respectively at the time of enrollment. This finding is inconsistent with cohort study conducted at Arba Minch hospital where 62.5% patients presented at WHO clinical stage three and four though topic of the research says patients present earlier and survival has improved but in Shashamane referral hospital 71% of patients presented for care at WHO clinical stage one and two which is more earlier than study at Arba Minch hospital. The possible cause for discrepancy might be due to delay in development of HIV related disease sign and symptoms, malignancy and unavailability of health facilities [17].

All eligible clients (100%) were on ARV drugs. This finding is higher than the finding of study conducted at Felege hiwot referral hospital in North West Ethiopia where 76.8% of eligible clients were on ART. It might occur due to change in national guide line on initiation of ART from CD4 count 200 cells/mm^3 - 350 cells/mm^3 , implementation of B⁺ option for prevention of mother to child transmission and increased countries potential to fight against HIV/AIDS pandemic in every aspect [9].

In 62.4% of cases eligibility criteria were set based on CD4 count even though CD4 machine is non functional and repeatedly broken. This finding is also different from the finding of study at Arba Minch hospital where 26.2% of patients' eligibility was determined using CD4 count [17]. The difference might be due to broken or non functional CD4 machine or absence of it at one time. The original regimen for 51.3% of clients was D4T based regimen and this finding contradicts with WHO guide line for ART which encourage AZT and TDF based regimen than

D4T containing regimens [16]. The difference could be resulted from transient scarcity of TDF supply and both AZT and TDF may require more laboratories monitoring than d4T-based regimens. Absence of chemistry and hematology machine may also reduced initiation of ART with AZT and TDF as also reported by a twenty five years female nurse, "... absence of functional hematology machine also another challenge to monitor hemoglobin level of patients on AZT containing regimen and to start AZT based regimen. We totally stopped to initiate AZT containing ARV drugs because our hematology machine is unfunctional for a long period of time."

In 84.2% of cases, switch to the second line regimen was due to immunological failure. This finding is also inconsistent with WHO guide line recommendation as clients with immunological failure may maintain viral suppression, unnecessary or premature switching of second line regimen can take place. And this might occur due to unavailability of viral load test which can confirm both immunological and clinical failure and avoids unnecessary switch to expensive second line ARV drugs [16, 35].

Sixty eight percent of clients on second line regimen were on 'ABC/DDI/LPV' and this study finding is different from WHO guide line for resource constraint countries which favors using two NRTIs as back- bone with LPV containing regimen than using ABC and DDI with LPV as they increase complexity and cost. This might happen because the guide line was updated recently and not yet implemented in all resource limited countries [16].

Hundred percent of clients who were eligible for CPT, initiated cotrimoxazole and this finding is higher than study conducted at Felege Hiwot referral hospital of North West Ethiopia where 75.8% of eligible clients for CPT initiated cotrimoxazole. This could be due to absence of cotrimoxazole at Felege Hiwot referral hospital at the then time and increased countries potential to fight against HIV/AIDS. Only 42.7% of clients who were eligible for IPT have taken INH and this finding is far lower than standard according to the WHO guide line [10]. Among those who have taken INH 100% of them were finished or stopped the INH. This implies that no INH prescribed for patients in the past six months which is also consistent with care providers' response on IPT.

A thirty two years male pharmacist said, "Regarding prophylactic drugs, there is stock out of INH for both adults and pediatric age group. As a result, IPT service for clients interrupted for the last one year." The reason for not taking or have taken INH was out of stock in the entire cases. Among clients who were diagnosed for active TB, 69% of them known to have smear negative pulmonary TB. It is similar with study conducted at South Africa which reported 68.5%

smear negative TB though nothing was mentioned about smear positive and extra pulmonary TB in this study.

Majority of clients (89%) who were eligible for RUTF were not prescribed for it. This is inconsistent with study finding on HIV positive children at Dares Salam; Tanzania where 64% received nutritional therapy [21]. The possible cause for the gap might be staff shortage and simplicity in diagnosing children malnutrition than adults since that study only focus on children. Almost all clients (98%) were dissatisfied on reaching to care providers on off hours, weekends and holidays. This is consistent with care providers' response on absence of service during off hours, weekends and holidays. Sixty five percent of clients were stayed for duration greater than 61 minutes from arrival to receiving medical records. It is much higher than study conducted at JUSH on satisfaction at ART clinic where majority of clients received their medical records in time less than 15 minutes while in Shashamane referral hospital majority of clients get their medical record in time greater than 61 minutes from central triage [25]. The discrepancy might be due to collection of all medical records at central triage following fully implementation of health management information system (HMIS) throughout the country which shifted collection of ART patients' medical records from ART clinic to central triage.

In 88.2% cases, waiting time for consultation after receiving medical record was less than 15 minutes and this finding is much lower than study at JUSH where majority of clients wait for time more than 60 minutes for medical consultation [25]. This could be due to difference in patient flows and shortage of health care providers.

Twelve percent of clients dissatisfied on affordability of care at ART clinic which is in line with thirty four years male physician response that says "clients forced to pay for OIs drugs when there is stock out from ART pharmacy although only those who can afford able collect it and no system yet designed to make free of payment and needs due attention as most of patients in ART clinic cannot afford for one or another reason."

Seventy two and half percent (72.5%) of clients were dissatisfied on understanding of what meant results of laboratory tests such as CD4 count for their health. This finding is much lower than study conducted at JUSH where 97.2% of clients satisfied on it [25]. It might be due to variation in commitment and competence of care providers in informing their clients' health status. Observational results reveal that waiting area is narrow, no separate ART laboratory and toilet which is inconsistent with national standard. ART clinic is too close to TB clinic and may result in increased risk of TB infection for HIV/AIDS clients since they belong to one of

susceptible groups for TB infection. This might have happened due to high prevalence of TB-HIV co-infection.

Qualitative result showed that shortage of man power at MRD, scarcity of OIs and ART drugs, absence of some medical equipment and laboratory services were among main challenges to deliver quality care and treatment service at ART clinic. It may occur due to defects in health system management in place.

ART clinic, especially ART pharmacy was not built in line with national infection prevention standard. A thirty two years male pharmacist stated “Patients who served in ART clinic are in high risk of acquiring various infections specially TB including multi drug resistant tuberculosis; no means of separating suspects of TB in place so that all patients wait for their services without any isolation of suspects. This will put both patients and care providers in high risk of acquiring TB even multi drug resistant TB.” This might be due to poor attention given for infection prevention activities or lack of knowledge on infection prevention in health facilities as a whole. He also complaining PFSA for improper documentation and reporting on drugs information which in turn results in stock out of ARV and OIs drugs at ART pharmacies. It may occur due to improper documentation and reporting of information following appropriate chains.

Strength and Limitations of the Study

Strength

Though there were other studies conducted on quality of ART clinic, this study exhausted all quality dimensions that include resource inventory, observation of structural aspects of the services, compliance of HIV clinical care with national guideline and assessment of providers’ and patients’ perception.

Limitation

Due to the fact that this study deals with personal and sensitive issues there could have social desirability bias. Interviewer influence on respondents and improper documentation of informations can be possible limitation of the study. In exit interview there is limited scope for the respondent to answer questions in any detail or depth. Health care provider-patient interaction observation sessions and immunological progress of clients were not assessed.

Chapter 8: Conclusions and Recommendations

8.1. Conclusions

- Linkage of pregnant mothers to antenatal care was poor and it results in miss to follow up of PMTCT services.
- All eligible clients were put on HAART and cotrimoxazole preventive therapy which is also in line with national standard guide line.
- In general, there is a defect of structural and input aspect at Shashamanne referral hospital ART clinic. This in turn leads to poor delivery of health care services.
- The number of clients who were on D4T containing regimen is still high as opposed to WHO guide line for ART which encourage AZT and TDF based regimen than D4T containing regimens.
- Switch to the second line regimen due to immunological failure is not as such recommended on WHO guide line since unnecessary shift of regimen may occur as compared to viral load test.
- INH prophylaxis was much below the national standard and no clients were put on INH in the past six months period. However; binary logistic regression indicates existence of association among IPT and development of TB disease.
- RUTF were not prescribed for a number of clients who deserve the therapy.
- Absence of care and treatment service on off hours, weekends and holidays had resulted in loss to follow up since some clients fail to visit ART clinic on working days.
- Shortage of competent and sufficient number of workers at MRD is the root cause for increased waiting time that resulted in clients' dissatisfaction on services at ART clinic.
- Significant numbers of clients were dissatisfied on affordability of ART clinic services.
- Most of the clients did not understand what meant laboratory results such as CD4 count and viral load test for their health.
- ART clinic is too close to TB clinic and may result in increased risk of TB infection for ART clients since they belong to one of susceptible groups for TB infection.
- Shortage of some medical equipment and scarcity of OIs drugs, ART drugs and absence of some laboratory services became challenge to deliver quality care and treatment service at ART clinic.

- Physical structure of ART clinic especially ART pharmacy was not build in line with infection prevention standard according to response of health workers. And this can put both clients and providers to the risk of acquiring various infections.

8.2 Recommendations

FEDERAL MINISTRY OF HEALTH

- FMOH must avail adequate medical equipments both in types and quantity for the hospital as existing ones are old and repeatedly broken.
- FMOH need to establish central laboratory at the zonal level for viral load test there by unnecessary shift to second line regimen can be avoided.
- FMOH and other partners working on HIV/AIDS must address new updates of WHO recommendation and need to optimize INH prophylaxis to reduce risk of TB infection.

OROMIA REGIONAL HEALTH BUREAU

- Oromia regional health bureau in collaboration with other partners need to arrange mechanisms that enable clients get the service on off hours, weekend and holidays.

SHASHAMANNE REFERRAL HOSPITAL

- Shashamanne referral hospital should deploy competent and adequate number of workers at MRD to reduce increased waiting time at central triage.
- Shashamanne referral hospitals in collaboration with other partners need to build separate ART laboratory and toilet; should also renovate ART pharmacy and clinics in line with infection prevention standard and TB clinic should be transferred to an area of significant distance from ART clinic.

HEALTH SERVICE PROVIDERS

- Health workers required to work strongly on strengthening inter referral linkage to increase utilization of PMTCT service.
- Health care providers should thoroughly assess the nutritional status of clients to provide them with nutritional therapies at right time.
- Health workers need to give clear explanation for clients about their laboratories results like CD4 count and viral load test meant for their health.

PFSA

PFSA as sole supplier of medical equipment and drugs it required to consistently follow the availability of medical equipment, OIs and ARV drugs in order to avoid their shortage at the health facilities.

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Annexes

I.CHECKLIST ON STRUCTURAL ASPECTS FOR CLINICS' COORDINATOR TO ASSESS AVAILABILITY OF RESOURCES

Availability of Health professional in ART clinic (in number)

General practitioner _____

Expert patients _____

Nurse _____

Pharmacist _____

Hospital should have the following functional medical equipment and others

Weighting scale (infant and adult)

CD4 Machine

Hematology machine

X-ray machine and ultra sound

CT scan

Chemistry machine

MUAC meter

viral load and rapid HIV test

Tape meter

Computer

Telephone

FORMATS AND REGISTERS

(Must be at every ART clinics)

- Pre-ART Register
- ART Register
- IPT Register

- STI Register
- Exposed infant register
- Food by prescription register
- PICT register
- Patient follow up Register
- In take form
- Family screening form
- Transfer out form

ART DRUGS (have to be available in ART

Pharmacy)

D4T/3TC/NVP (adult fixed dose)

D4T/3TC (adult fixed dose)

AZT/3TC(adult fixed dose)

AZT/3TC(adult fixed dose)

EFV (adult dose)

ABC (adult and pediatric dose)

DDI(adult and pediatric dose)

TDF/3TC (adult fixed dose)

AZT (adult and pediatric dose)

NVP(adult and pediatric dose)

Trimoune baby

Trimoune junior

EFV(pediatric preparation)

- Referral slip for care and support services
- CD4 request form
- Hematology request form

- Parasitological request form
- Bacteriology request form
- X-ray request form
- Ultra sound request form
- DBS request form
- Chemistry request form
- Urinalysis request form
- Serology request form

GUIDE LINES (at least one has to be available in ART clinic)

pediatrics ART guide lines

CPT prophylaxis guide lines

National nutrition guideline

STI management manual

TB/HIV co-infection management

Palliative care guide lines

Adult ART guide lines

OIs AND PROPHYLACTIC DRUGS

(Have to be Available in ART pharmacy)

- Clotrimazole
- Nystatin
- Amoxicilline
- Augumentine
- Pyridoxine
- Albendazole
- Cloxacilline
- Ciprofloxacilline
- Doxycycline
- Clarytromycin
- Mebendazole
- Fluconazole
- Metronidazole
- INH
- Miconazole
- Acyclovir

OTHER MEDICATIONS (must be available in ART pharmacy)

Dextrose

Ferrous sulphate

Ringer lactate

Metclopramide

Carbamazipine

Calcium folnate

ORS

Mult vitamines

Coartem

Tramadole

Codein phosphate

Paracetamol

Ibuprofen

Diclofenac (injection and tablets)

Hydrocortisone

Antacid syrups, Cimetidine & Omeprazole

Normal saline

Contraceptives

Procaine penicillin

Crystalline penicillin

Chloramphenicol

Ceftriazone

II. OBSERVATION CHECK LIST

No.	Characteristics	Yes	No	Remark
1	Are the receptions and waiting areas for ART clinics clean?			
2	Is there an adequate number of chairs for the number of patients present at waiting area?			
3	Does examination room for ART clinic have adequate 3 chairs and a desk?			
4	Does examination room for ART clinics have adequate equipments, examination couch, instruments?			
5	Do ART clinics have separate laboratory?			
6	Do ART clinics have separate pharmacy?			
7	Do ART clinics have latrine?			
8	Does functional telephone available at ART clinic			
9	Do computers used both at ART clinics and data clerk room?			

III. CHECK LIST FOR MEDICAL RECORDS REVIEW

Part I: socio demographic characteristics			
S.No.	Variable	Response	Skip to
101	Age	_____	
102	Sex	Male-----1 Female-----2	If '1' skip to 105
103	Ever become pregnant after enrollment to HIV care.	Yes-----1 No-----2	
104	Ever linked to PMTCT services following pregnancy.	Yes-----1 No-----2	
105	Educational status	Illiterate-----1 Able to read and write---2 High school-----3 Tertiary level-----4	

106	Ethnicity	Oromo-----1 Amhara-----2 Sidama-----3 Wolaita-----4 Tigre-----5 Kembata-----6 Others(specify)-----88	
107	Occupational status	Student-----1 Farmer-----2 House wife-----3 Self employee-----4 Employed-----5 Others(specify)-----88	
108	Residence	Urban-----1 Rural-----2	
109	Religion	Islam-----1 Orthodox-----2 Catholic-----3 Protestant-----4 Others(specify)-----88	
110	Marital status	Single-----1 Married-----2 Divorced-----3 Separated-----4 Widow/widower-----5	If “1” skip to 201
111	Husband/wife tested for HIV	Yes-----1 No-----2 I don't know--3	If “2 or 3” skip to 113
112	HIV status of husband/wife	Positive-----1 Negative-----2 Unknown-----3	
113	Do patient has his/her own children	Yes-----1 No-----2	If “2 ” skip to 201
114	Number of children	_____	
115	Number of children tested for HIV	_____	
116	Number of children tested for HIV Positive	_____	

117	Number of children tested for HIV negative	_____	
Part II: Clinical related condition			
201	CD4 count	Base line _____ 6 th month _____ 1 st year _____ 2 nd year _____ 3 rd year _____ 4 th year _____ 5 th year _____	
202	Number of entries for functional status	_____	
203	Out of entries how many were	Bed ridden _____ Ambulatory _____ Working _____	
204	Weight(kgs)	Base line _____ 6 th month _____ 1 st year _____ 2 nd year _____ 3 rd year _____ 4 th year _____ 5 th year _____ Current weight _____	
205	Current height in cm	_____	
206	WHO stage at the time of enrollment to HIV care	_____	
207	Does the patient eligible for ART	Yes-----1 No-----2	If “2 ” skip to 221
208	Date patient eligible for ART (Eth. C)	____/____/____	
209	What is the eligibility criteria	WHO stage-----1 CD4 count-----2 Both WHO stage and CD4 count ---3	
210	Eligible and ready date	____/____/____	
211	Date ART started	____/____/____	
212	Original regimen	D4t/3TC/NVP-----1 D4t/3TC/EFV-----2 AZT/3TC/NVP-----3 AZT/3TC/EFV-----4 TDF/3TC/NVP-----5 TDF/3TC/ EFV-----6 Others(specify)-----88	
213	Was there any substitution	Yes-----1	If “2 ”

		No-----2	skip to 215
214	What was the reason for substitution	Toxicity-----1 Pregnancy-----2 New TB -----3 No entry-----4 Others(specify)-----88	
215	Was there switch to 2 nd line regimen	Yes-----1 No-----2	If “2 ” skip to 220
216	What was the reason for shift	Clinical failure -----1 Immunological failure-----2 No entry-----3 Both Clinical and Immunological failure-----4 Others(specify)-----88	
217	First 2 nd line regimen	_____ (write full regimen)	
218	Was there any substitution for 2 nd line	Yes-----1 No-----2	If “2 ” skip to 220
219	What was the reason for substitution of 2 nd line	Toxicity -----1 New drugs available-----2 Out of stock-----3 No entry-----4 Others(specify)-----88	
220	Was the patient gave relatives and his own full address	Yes-----1 No-----2	
Part III: prophylaxis and OIs related question			
301	Was the patient eligible for Cotrimoxazole	Yes-----1 No-----2	If “2 ” skip to 304

302	Was Cotrimoxazole initiated	Yes-----1 No-----2	
303	Stopped or finished Cotrimoxazole	Yes-----1 No-----2	
304	Result of last entry for TB screening	Positive-----1 Negative -----2	If “1” skip to 309
305	Was the patient eligible for INH	Yes-----1 No-----2	
306	Was the patient taking/have taken INH	Yes-----1 No-----2	If “2 ” skip to 308
307	Stopped or finished INH	Yes-----1 No-----2	
308	Reason for not taking/have taken INH	Out of stock-----1 Fear of side effect-----2 HBV/HIV co-infection--3 Others(specify)-----88	
309	Was patient diagnosed for TB before or after starting ART	Yes-----1 No-----2	If “2 ” skip to 401
310	Types of TB	Pulmonary, smear positive-----1 Pulmonary, smear negative-----2 Extra Pulmonary -----3	
Part IV: Nutritional conditions			
401	BMI of the client	<18.5-----1 >18.5-----2 Cannot be determined---3	If “2 and 3 ” skip to 501
402	Was RUTF given to patient	Yes-----1 No-----2	

Informed Consent

Good morning/afternoon, my name is _____. I am working as data collector for a researcher from Jimma University. You are selected for this study which aimed to assess satisfaction of patients in ART clinics of SRH to complete the questionnaire designed by the researcher. Participation in this interview is based on your free-will to do so and you have full right not to participate and to withdraw from the interview if you feel dissatisfied with it. At the same time, if you don't want to respond to some of the questions, you can refuse to answer it. But your participation and contribution in the study is very important to come up with important findings which may help local health planners to intervene the problem locally. If you have any question, now or even after the end of this interview, I will be very happy to hear and respond to it. The information you give me will be strictly kept confidential and will only be used for this research purpose. Even in the research your names or anything that directly and specifically identifies you will not be included.

Date: _____

Interviewer's name: _____

Interviewer's signature: _____

Interviewee's signature: _____

V. INTERVIEWER ADMINISTERED QUESTIONNAIRE (EXIT INTERVIEW)

502	Sex	Male-----1 Female-----2	
503	Marital status	Single-----1 Married-----2 Divorced-----3 Separated-----4 Widow/widower----5	
504	ethnicity	Oromo-----1 Amhara-----2 Sidama-----3 Wolaita-----4 Tigre-----5 Kembata-----6 Others(specify)-----88	
505	religion	Islam-----1 Orthodox-----2 Catholic-----3 Protestant-----4	

		Others(specify)-----88	
506	residence	Urban-----1 Rural-----2	
507	Educational status	Illiterate-----1 Able to read and write--2 High school-----3 Tertiary level-----4	
508	Occupational status	Student-----1 Farmer-----2 House wife-----3 Self employee-----4 Employed-----5 Others(specify)-----88	
509	I have received medical care here for	Less than 1 year-----1 1 to 2 years-----2 3 to 5 years-----3 more than 5 years -----4	
510	If I needed care during off hours (evenings and weekends), I could reach someone at the clinic who could help me.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
511	If I had a medical question, I could get someone on the phone to discuss it with me.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
512	While I checked in for medical care, the staffs were friendly greets me.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
513	HIV-specific educational materials were available for me to read.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
514	What I feel with total length of stay from arrival to consultation.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	

515	How long I had to wait from my arrival to receiving medical record	< 15 minutes-----1 16-30 minutes-----2 31-60 minutes -----3 >61 minutes -----4	
516	How long I had to wait for my consultation after I received my medical records.	< 15 minutes-----1 16-30 minutes-----2 31-60 minutes -----3 >61 minutes -----4	
517	How long I had to wait from my arrival till completion of consultation	<30 minutes-----1 31-60 minutes-----2 61-120 minutes-----3 >121 minutes-----4	
518	When I saw my providers, my visits got interrupted (by phone calls, other patients, etc.).	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
519	My providers made sure I understood what my lab test results (such as CD4 and viral load) meant for my health.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
520	I wanted to be more involved in making decisions about my health care.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
521	If I had a complaint about my medical care, my providers would ignore it.	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
522	When I asked my providers questions about my HIV care, it was hard to understand their answers	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
523	I got services in the language I wanted	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	

524	I did get the medical care I needed because I could pay for it	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
525	My providers explained the side effects of my HIV medications in a way I could understand	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
526	My providers suggested ways to help me remember to take my HIV medications	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
527	My providers explained to me how to avoid getting sick	Strongly satisfied -----1 Satisfied-----2 Dissatisfied -----3 Strongly dissatisfied-----4 No response-----5	
528	When I think about my care at this clinic, these words come to mind	Excellent -----1 Adequate-----2 Terrible----- -3 OK-----4 Poor----- -5 Busy -----6 Personal -----7 Caring ----- 8 Friendly-----9 Safe-----10	
529	I would rate the quality of care at this clinic in comparison to other clinics I know about as	Good-----1 Better-----2 Best-----3 Bad-----4 Worse-----5 Worst-----6	

VI. GUIDELINE FOR IN DEPTH INTERVIEW WITH HEALTH CARE PROVIDER

Good morning/afternoon! My name is from Jimma university, College of Public Health and Medicine and Department of Health Service Management. I am here to study about quality of care at ART clinic in SRH and I would like to discuss some issues related to quality with you that are important for improving quality of HIV/AIDS care and treatment in your hospital ART clinic. So both positive and negative opinions and your experiences that you will share have a paramount important to the result of this study. The interview will be tape-recorded in order not to miss any points of the discussion. You are free to participate and to refuse. Please be assured that I will not record any names or other identifying information. I will protect the information you give me as much as I can and used for this study purpose only. May I continue?

Yes _____

No _____

1. Standards and guidelines

How the health care providers in this clinic work? Are there standards and/or guidelines for health workers to provide health service for clients in ART clinic? (At examination room -ART)

2. Drugs and reagents

ART drugs, OIs drugs and medical equipments necessary for ART always available in the clinics? If no, what do you think the reason?

3. Provision of information and counseling

Do you think health professionals in ART clinic provide clients adequate and relevant information about their health status, medications and appointments? If no, what do you think the reasons?

4. Health facility comfort and cleanness

Can you explain the cleanness and comfort of: Waiting areas, ART clinic, Toilets, Laboratory and Pharmacy?

5. Problems related to the service

What are the major problems that you think contribute to the dissatisfaction of clients?

Please mention some reasons in the sequence of importance

6. Measures taken to improve problems

Can you tell about any measures taken to make the changes in the facility in the provision of ART services? If yes, what were the measures? In registration rooms (waiting time, respect, information...),in the waiting area (comfort, information),in the examination

room (privacy, time spent....),in the pharmacy: (availability of drugs and reagents, provision of information about drugs, adherence, side effects...) and in the laboratory (waiting time, availability of basic Lab. Tests...)

7. Providers' motivations

What do think should be done to improve the service quality of ART in this hospital?

VII. INTERVIEWER ADMINISTERED QUESTIONNAIRES IN AFAN OROMO

SEENSA: Nagaa bultanii/ooltanii, maqaa koo_____jedhama, yeroo kanati barataa mastarii Univarsitii Jimmaa irraa dhufeef ragaa qorannoo Qulqullina yaalaa kutaa ART Hospitaala Rifarrala Shashamannee sassaabaa jira.Kanaaf isinis itti quufinsa yaala kutaa kana irrati qabdaniif odeeffannoo akka nuuf kennitan filatamtanii jirtu.Haa ta'u malee, hirmaanaan keessan guutumaan guututti fedhii keessan irrati Kan hundaaye yoo ta'u, wanti isinitti hin tole yoo jirate jalqabumma irra ragaa kennu dhabuu ni dandeessu. Akkasuma gidduun kutuu ykn immoo yaada ragaa kennu hin barbaanne irraan darbuu ni dandeessu.Garuu, ragaa isin nuuf kennitan bu'aa qorannoo Kanaaf Baayee barbaachisaa dha.Gaaffii yoo qabaatan yeroo feetanit gaaffachuu ni danda'ama.Odeeffannoon isin irraa argannu iciitin Kan qabamu yoo ta'u, maqaa keessan ykn wanta Waa'ee keessan ibsuu danda'u hin fayyadaminnu.

Guyyaa _____ Mallattoo gaafatamma _____

	Gaaffii	Fillannoo Deebii	
501	Umrii(waggaadhaan)	_____	
502	Saala	Dhiira-----1 Dubara -----2	
503	Fuutee/heerumtee	Hin fuunne/heeruminne-----1 Fuudheera/heerumiteerti-----2 Wal gad-lakkisaniiru-----3 Gargar fagaatanii jiraatu-----4 Abbaan mana/haati mana kan du'e/duute---5	
504	Saba	Oromoo-----1 Amaara-----2 Sidaama-----3 Wolaaytaa-----4 Tigree----- 5 Kan biro(gargar baasi)---88	
505	Amantii	Islaama-----1 Ortoodoksi-----2 Kaatoolik-----3	58

		Protestaantii-----4 Kan biro(gargar baasi)----88
506	Iddoo jireenyaa	Magaalaa-----1 Baadiyaa-----2
507	Sadarkaa barnootaa	Hin baranne-----1 Dubbisuu/barreessu ni danda'u---2 Sadarkaa lamaffaa-----3 Barnoota olaana-----4
508	Hojii	Barataa-----1 Qotee bulaa-----2 Haadha mana -----3 Kan ofii hojjetu-----4 Kan qacaramme-----5 Kan biro(gargar baasi)-----88
509	Hospitaala kanati yeroo hangam yaalama turte	Waggaa 1 gad-----1 Waggaa 1 hanga 2-----2 Waggaa 3 hanga 5-----3 Waggaa 5 ol-----4
510	Yeroo Hojii idileen alatti yaala /gargaarsa yoo barbaade argachuu dandeessa	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
511	Waa'ee dhukkubi kee gaaffachuu yoo barbaade namni bilbilan argatte waliin haasoftu jira	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
512	Yeroo yaalaaf ogeesotti bira seentu sirnaan si simatuu	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
513	Barruulleen Waa'ee HIV qaban kan dubbifaman argachuu dandeessa	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
	Dheerina turtii erga Hospitaala seente hanga yaala argatuutti maaltu	Baayee itti quufeera-----1 Itti quufeera-----2

514	si dhagahamme.	mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
515	Hospitaala seente hanga faayil baafatuuf yeroo hangam si fudhatte	Daqiiqaa 15 gad-----1 Daqiiqaa 16-30-----2 Daqiiqaa 31-60-----3 Daqiiqaa 61 ol-----4
516	Erga faayil baafate hanga ogeessa bira seentutti yeroo hangam si fudhate	Daqiiqaa 15 gad-----1 Daqiiqaa 16-30-----2 Daqiiqaa 31-60-----3 Daqiiqaa 61 ol-----4
517	Erga dhuftee hamma yaala xumurtutti hangam turte	Daqiiqaa 30 gad-----1 Daqiiqaa 31-60-----2 Daqiiqaa 61-120-----3 Daqiiqaa 121 ol-----4
518	Yeroo ogeessa bira seentu wali'aansi kee bilbilaan ykn dhibamtoota birootiin gargar si jala citee jira	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
519	Ogeesson kee bu'aan laaboraatoorii kan akka CD4 fayyaa keetiif maali akka ta'e siif ibsuu	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
520	Ogeesson kee wa'ee fayyaa keeti irrati murtii akka kennitu si hirmaachisuu	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
521	Oggaa ati dhukkubi kee Ogeessatti himatu sirritti sidhaggeeffatu	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
522	Ogeeyyii kee wa'ee yaala HIV yoo gaaffattu Deebii quubsaa siif kennu	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5

523	Afaan ati barbaaduun tajaajila argata	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
524	Gatiin yaalaf gaaffatamtu irrati itti quufinsa qabda	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
525	Ogeeyiin akka ati hubachuu dandeessutti miidhaa qorchi HIV fiduu malu siif ibsuu	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
526	Ogeeyyiin kee toofta qorcha yeroon akka fudhatu si gargaaru si himaniiruu,	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
527	Ogeeyyiin kee toofta dhukkubi ofirra ittiftu si himaniiruu	Baayee itti quufeera-----1 Itti quufeera-----2 mufadheera-----3 Baayee itti mufadheera-----4 Deebii hin kennine-----5
528	Waa'ee yaala kee kan kilinika kana yoo yaadatu maaltu sammutti si dhufa	Heddu gadhee-----1 Gadhee-----2 Kan dhiphate-----3 Nama filatu-----4 Gahaa-----5 Miidhaa hin qabu-----6 Kunuunsaa-----7 Ija firumaa nama ilaalu-----8 Gaarii -----9 Baayee Baayee bayeessa-----10
529	Qulqullina yaala kilinika kana kilinika biro kan beektuun yoo wal birra qabdu akkamitti rammada	Gaarii-----1 Baayee gaarii-----2 Baaye Baayee gaarii -----3 Badaa-----4 Baayee Badaa-----5 Baaye Baayee Badaa-----6