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## THE PHARMA INNOVATION - JOURNAL

### Quality of Clinical Care for People Living With HIV/AIDS in Dil Chora Referral Hospital, Dire Dawa, East Ethiopia

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**Background:** Acquired immune deficiency syndrome has had a detrimental socio-economic impact on the country. Antiretroviral therapy and ensuring the quality of all services are major components of comprehensive response against acquired immune deficiency syndrome. This study was to assess the quality of care provided to persons living with human immune virus.

**Methodology:** Facility based cross-sectional study design was conducted June to November 2010 in Dil Chora hospital. Inventories were performed in the antiretroviral therapy clinic, laboratory and pharmacy. Donabedian's structure–process–outcome model of health care quality was employed as framework. A 24-item and five scale satisfaction questionnaire was employed to measure the level of satisfaction of patients.

**Results:** The level of satisfaction of clients average satisfaction level was 3.82, 95% CI (3.77, 3.87). About 47.4% of patients had at least one visit during last three months. Only 34.9% of clients had CD4 counting service twice and paired t-test mean differences between the initiation and last three months showed [OR=132.88; 95% CI: 97.1, 168.6) t=7.35].

**Conclusion:** The proportion of patients who are with a functional status of working at 12 months of antiretroviral therapy was much lower than nationally in six months. The health bureau and hospital administration mobilize resources to available resource to improve of quality service.

**Keyword:** Quality, Antiretroviral therapy, Health care, Patient, Ethiopia.

#### 1. Introduction

Worldwide, there were 2.1 million deaths due to AIDS in 2007. About 76% occurred in Sub-Saharan Africa which remains the most seriously affected region and AIDS is the leading cause of death [1]. In Ethiopia in 2005, 1,320,000 people were living with HIV/AIDS. There were 134,450 AIDS deaths in which 20,929 of them were children. It accounted for an estimated 34% of all young adult deaths 15-49 in Ethiopia and 66.3% of them were urban [2]. Evaluation of clinical services and planned activities for particular diseases is now seen as an important part of assessing quality of care by the health system. Quality of health care was also an issue addressed in health sector development program [3].

Antiretroviral therapy started in Ethiopia in June 2003 through a self financing mechanism. In January 2005, ART became free to all patients in the country [2, 4]. The government of Ethiopia created an enabling environment through the development of the national HIV/AIDS strategic framework and road map [5]. Antiretroviral therapy and ensuring the quality of all services are major components of comprehensive response against HIV/AIDS [6]. The Ethiopian government launched the accelerating access to HIV/AIDS treatment, Road map 2004-2006 in January 2005 which aims to provide universal access to ART for all patients by the year 2008 [2, 5]. Despite the improvement in the number of people on ARV

treatment that is 50% short of the target and the ARV program being free, only 10% of PLHIV who need ART are accessing it [3, 7].

The Institute of medicine defines healthcare quality as “the degree to which services for individuals and populations increase the likelihood of desired health outcomes and are consistent with current professional knowledge” [8, 9]. Quality of health service is becoming a public health concern in many countries in the world [3]. Governments must fulfill the core public function of stewardship and put in place processes that ensure good quality of care for the population in the health sectors [10]. Evaluation of clinical services is now seen as an important part of assessing quality of care by the health system [11]. Lack of professional skills and client-provider communication has been taken as priority component determining quality of care [12]. Provider-client interaction in counseling, testing, managing opportunistic infections, documentation and related services were considered as contributing factor for client's satisfaction on the service [13].

Although there is implementation of client oriented provider efficient in Ethiopia, there is no comprehensive national system of measuring, improving and reporting on the state of the health service. Quality improvement is an essential element of health services, but it remains a major concern for the ministry of health, health service providers and the public [3]. The general objective of this study was to assess the quality of clinical care for people living with HIV/AIDS and associated factors in Dire Dawa Dil Chora referral hospital.

## 2. Method

### 2.1 Study area and Period

A cross sectional study was conducted June to November, 2010 in Dire Dawa Dil Chora Referral Hospital. Dire Dawa is a town located at a distance of 515 Km a far from Addis Ababa, 311 km south of Djibouti and 55 km South of Harar town. It uses as destination area for long distance track drivers and uniformed services in the eastern part of the country. Dire Dawa Dil Chora referral hospital is convenient and representative health facilities considered appropriate for the study because both

urban and rural residents have access to the various health services. Dire Dawa Dil Chora referral hospital is the governmental hospital in the town established in 1952 E. C. The hospital got an ART clinic which has been providing service since 1996 E.C. Around 4637 HIV positive individuals enrolled in the clinical care and treatment. Based on the 2007 census of Ethiopia, Dire Dawa has a total population of 342,827, of whom 171,930 were men and 170,897 women, and 232,854 or 67.92% of the population are considered urban inhabitants.

### 2.2 Study Design and population

Institutional based cross sectional study which has both quantitative and qualitative type was conducted from June to November 2010 in Dire Dawa town. All HIV positive individuals whose age above 16 years old in the vicinity enrolled in the ART clinical care and treatment system in Dil Chora referral hospital. Patients who have been in care and treatment for at least six months were eligible for record review. On the other hand, patients visiting the clinic for the first time, transferred out or into, patients who had no clinic visit during one year period prior data collection were excluded from the patient exit interview.

### 2.3 Sampling Technique

Sample size was determined for document review from ART, for provider-client in-depth interview and for exit interview from patients visiting the HIV clinic to assess their satisfaction. Sample size for document review was determined using single population proportion by considering 95% confidence level and 5% margin of error and population proportion of 50% was 384. A total of 378 systematically selected documents were reviewed in the study by taking the sampling frame from the registration book. Determination of sample size for exit interview was based on recommendation from HIVQUAL project of New York State department of health AIDS institute, 2002 that the sample size by case load per year providers with more than 1000 patients should collect minimum sample size 125 surveys per year. Therefore, the sample size for exit interview was determined by considering 95% confidence level,

5% marginal error and the proportion of client level satisfaction were 78.0% that obtain from study done in Felege Hiwot referral hospital exit interviews [12]. Then by computing correction formula and non response compensation, the final sample size for exit interview was 261. In-depth interview qualitative study was conducted purposively selected 37 key informants until point of saturation of information was reached.

Systematic sampling technique was used to select records for document review and in-depth interview systematically every tenth client among all clients visited the ART clinic during the study was involved. All clients (239) visited the ART clinic during the study period were involved in the exit interview.

#### **2.4 Data collection instrument**

Data collection instrument were prepared based on the national guideline for standard for chronic care. A satisfaction questionnaire adapted from the HIVQUAL project of New York State department of health AIDS Institute, the QUOTE-HIV instrument. Donabedian's structure-process-outcome model of health care quality was employed as a framework for the study. The measures included availability of resources required to provide HIV clinical care, compliance of HIV clinical care practice with national guidelines, and outcomes of care including behavioral, immunologic and clinical conditions. Quality indicators involved were those of the national guidelines indicators. Selected indicators were reviewed by physicians working on HIV/AIDS control program as well as HIV care-providing facilities for their local relevance during the pre-test.

#### **2.5 Data collection technique**

Prior to data collection, pretest was done on data collection techniques and sampling procedures nearby health institution in Legehare health center among a population with similar characteristics that were 5% of the sample size of population for exit interview. Instruments were evaluated for acceptability, reaction of respondents and time requirement to filling out the questionnaire. Finally ambiguous and unclear questions were

modified. The data were collected by using observational checklist for availability of resources, review of patient charts and face to face exit interview of patients to measure their satisfaction. In addition, in-depth interview was done among key informants. The tool was prepared in English then translated to local language Amharic and again back translated to English. Training of data collectors and supervisors were done prior to data collection.

#### **2.6. Data Processing and Analysis**

The data were checked and edited for incompleteness, internal consistency and accuracy to ensure that all the information had been properly collected and recorded. All collected data were entered in to SPSS window version 16.0. Descriptive statistics like frequency, percent and proportion were used. Both linear and logistic regression model used to see how factors affect the probability of receiving service of unacceptable quality. Statistical association was declared at 95 % confidence interval and p value <0.05.

#### **2.7 Ethical Considerations**

Ethical clearance and permission were obtained from institutional research ethical review committee of Haramaya University. Permission to conduct the study was secured from Dire Dawa administration and health bureau. Informed verbal consents were obtained from all the study participants. Questionnaires were anonymous and confidentiality was strictly maintained.

### **3. Results**

#### **3.1 Background characteristics of respondents**

Systematically selected 378 documents were reviewed. Sex and age socio-demographic characters considered to describe the respondents. Majority of the respondents 216 (57.1%) were females and 209 (55.6%) were age greater than 30 years. The median age of respondent was 30 years. About 261 clients were participating on exit interview that make 91.6% response rate. Majorities (70.3%) of the respondents were females and (50.6%) were Amhara ethnic. The median age was 35 (22-80) years. Hundred eleven (46.4%) were married and 79 (33.1%) had

attending grades 1 to 6 as the highest grade levels (Table 1, 2).

**Table 1:** Socio-demographic characteristics of HIV patients involved in the document review Dil Chora referral hospital, Dire Dawa, November 2010

Socio-demographic characteristics	Categories	Number (Percent)
Sex of respondents (n=378)	Male	162 (42.9)
	Female	216 (57.1)
Age of respondents (n=376)	<14	16 (4.3)
	5-19	25 (6.6)
	20-24	48 (12.8)
	25-29	78 (20.7)
	>30	209 (55.6)

**Table 2:** Socio-demographic characteristics of HIV patients involved in the exit interview Dil Chora referral hospital, Dire Dawa, November 2010

Variables	Categories	Frequency (Percent)
Sex of respondents (n=378)	Male	71 (29.7)
	Female	168 (70.3)
Age of respondents (n=376)	15-19	0(0)
	20-24	11(4.6)
	25-29	38(15.9)
	>30	190(79.5)
Ethnic back ground (n=238)	Amhara	121 (51.1)
	Oromo	81 (34.2)
	Others	35(14.8)
Marital status (n=239)	Not Married	17 (7.1)
	Married	111 (46.4)
	Divorced	55 (23.0)
	Widowed	56 (23.4)
Highest grade attended (n=239)	Not able to read and write	38 (15.9)
	Read and write only	35 (14.6)
	1 to 6 grade	79 (33.1)
	7 to 8 grades	44 (18.4)
	9 to 12 grades	34 (14.2)
	12 + grades	9 (3.8)

Document review was done among 378 patient records based on 8 ART quality indicators were employed for measuring the performances of process and outcome indicators. One hundred seventy nine (47.4%) had at least one HIV clinic visit during last three months. As there was interruption of CD4 count service in the hospital eligibility for cotrimoxazole prophylaxis which was determined based on WHO clinical staging. Two hundred ten clients WHO clinical stage 3 and 4 were provided their cotrimoxazole during their last visit. Hence the proportion of patients eligible for cotrimoxazole prophylaxis who were on CPT during last visit was 84.7%. About 222 (58.7%)

patients were on ART and of them 214 (91.6%) reported to have had good adherence to ART on last visit, and 13 (5.9%) were on month zero hence adherence to ART was not measured. One hundred forty four (38.1%) had CD4 count at least once during last three months and the proportion of patients on HIV care and treatment who had CD4 count at least once during last six months was determined to be 54.0% (Table 3).

Among 222 patients on ART, 140 (63.1%) had at least one HIV clinic visit during last three months. Among 140 patients on ART, 79 (56.4%) who had at least one HIV clinic visit during last three

months. Almost three fourth (74.3%) patients on ART were with a functional status of working

during their last visit (Table 4).

**Table 3:** performance on process indicators Dil Chora referral hospital, Dire Dawa, November 2010

Process Indicators	Denominators	Percent
Proportion of patients who have continued care	378	47.4
Proportion of patients eligible for CPT	248	84.7
Proportion of patients on HIV care and treatment who had CD4 count at least once during last six months	378	54.0

**Table 4:** Performance on outcome indicators Dil Chora referral hospital, Dire Dawa, November 2010

Outcome Indicators	Denominators	Percent
Proportion of patients on ART with good (>95%) reported adherence on their last visit	214	91.6
* Proportion of ART patients in a cohort who are alive and on ART at 12 months	104	56.4
Proportion of patients who are with a functional status of “working” at 12 months of ARV therapy	379	21.4
Average of overall satisfaction	239	54.6

**Table 5:** Length of stay in the care and reported state of health of respondents involved in the exit interview, Dil Chora referral hospital, Dire Dawa, November 2010

Items	Categories	Frequency	Percent
Length of stay in the medical care (n=239)	Less than 1 year	29	12.1
	1 to 2 years	83	34.7
	3 to 5 years	109	45.6
	More than 5 years	18	7.5
Respondents last visit before the day of interview (n=239)	Less than 1 month	69	28.9
	1 to 2 month ago	168	70.3
	3 to 6 month ago	1	0.4
	More than 6 month	1	0.4
Health of respondents rated the day of interview (n=239)	Poor	38	15.9
	Fair	29	12.1
	Good	91	38.1
	Very good	74	31.0
	Excellent	7	2.9

Hence proportion of patients who are with a functional status of working at 12 months of ART was 21.4% and 213 (56.3%) were working during enrolment. The proportion of patients working with a functional status of working during their last visit was 278 (73.5%). There was an increased by 17.2% after their enrolment in the care. The proportion of ambulatory patients reduced from 30.2% to 15.9%. Only 132 (34.9%) clients involved in document review had CD4 counting service twice and paired t-test was done to measure the mean differences between the initiation and last three months was 132.88 (95% CI: 97.1, 168.6,  $t=7.35$ ). On exit interview 261 clients were participating with response rate of 91.6% (239) to

measure level of satisfaction of clients. More than half, 127 (53.1%) of respondents attended ART clinic for at least three years, and almost all of them (99.2%) didn't took them more than two months to visit ART clinic again since their last visit. The rate their state of health on the day of the interview not good were 67 (28.2%) (Table 6).

A 24-item satisfaction questionnaire with five point scale (1-5) was employed to measure the level of satisfaction on each item. The 24 items were categorized under three aspects as service characteristics aspect (8 items), communication aspect (7 items) and service provider characteristics aspect (9 items). The average satisfaction level (overall) of was 3.82 out of 5

(54.6%) 95% CI (3.77, 3.87). Of the three satisfactions measuring domains used to determine on service providers side that average level of

patient satisfaction 4.41 of 5 (54.6%) more than service characteristics and communication (Table 3).

**Table 6:** Level of satisfaction of respondents by aspects (domains) of satisfaction Dil Chora referral hospital, Dire Dawa, November 2010 [n=239]

Domains of Patient satisfaction	No of items in the domain	Average patient satisfaction out of 5 (95% CI)	Achievement Percent
Communication	7	3.0719 (2.98, 3.16)	17.6
Service characteristics	8	3.8705 (3.81, 3.91)	54.0
Service providers characteristics	9	4.4083 (4.36, 4.46)	58.2
Average of all characteristics	24	3.8210 (3.77, 3.87)	54.6

Least degree of satisfaction is 1.64 ( $\pm 0.81$ ) for HIV specific information education communication materials. Highest was 4.92 ( $\pm 0.46$ ) for providers answer clarity to patients. Mean satisfaction for males and females were 3.88 & 3.82 respectively. Rating of health as good the day of interview was predictor of scoring average or more satisfaction  $p=0.029$  [OR=1.982, 95% CI: 1.073-3.661]. The correlation coefficients for the three sub scores ranged between 0.51 and 0.78. All the correlation coefficients reached a statistically significant level  $p<0.001$ . No linear relation was observed between age and overall satisfaction scores ( $p=0.088$ ). Mean satisfaction for males and females were 3.88 & 3.82 out of 5 respectively and no significant difference was identified  $p=0.56$ . Rating of health as good the day of interview was predictor of scoring average or more satisfaction  $p=0.029$  [OR=1.982, 95% CI (1.073-3.661)].

### 3.2. Resource Availability

The assessment of ART/ chronic care clinic, laboratory and pharmacy support were the area considered for availability of resource at Dil Chora referral hospital. Adequate space for confidential counseling, Universal precaution materials, reference materials, information education communication materials, infection prevention practices and guidelines were adequately available, and post exposure prophylaxis services were provided.

The laboratory had 12 out of the required 15 personnel during the visit. Number of laboratory technicians to patient load does not match and training was provided. Adequate space for specimen processing, testing, and storage of

reagents and supplies was available. The laboratory had two old CD4 counting machines during the visit but one was not functioning during the visit and it was reported that the service was interrupted the previous two months. Interruption of the service for about four to five times per year was common during which specimen were sent to Harar regional laboratory for processing during service interruption. A 42 years old male patient who attended the clinic for a refill visit and who admitted his being on ARV for the previous five and more years said that people in the clinic were providing advice on the importance of having the CD4 count at regular interval though he was not able to do it because he was not able to collect the results even after the specimen were sent to Harar. The hospital had required 17 pharmacists during the survey but it had 12 during the visit who does not meet patient load. High staff turnover, lack of refreshment training and lack ART pharmacy in the clinic were main sources of difficulties for dispensing drugs especially during shifting of treatment regimens. Adequate space for storage and dispensing were available but not for adherence counseling and pre-ART, initiation ART, OI drugs, and palliative drugs were available but acyclovir and miconazole. Computer software was used to ensure drugs were stored, dispensed appropriately, forecasting and procuring drugs supplies timely.

### 4. Discussion

Nearly nine from every ten patients on ART in this study were reported to have had well ( $>95\%$ ) reported adherence to ART on last visit. On the other hand, Felege Hiwot referral hospital was

97.7% and 76.8% of patients eligible for ART were actually taking ART [12]. The national guideline for the treatment of patients with HIV/AIDS in Ethiopia encourages patients on ART adherence to be measured quantitatively during last refill visit [6]. But in this study adherence was not measured quantitatively for all patients on ART during last refill visit.

A study done at Bahir Dar reported that only 45.9% of patients eligible for cotrimoxazole prophylactic therapy were actually taking CPT [12]. This study reported eligible for CPT and who were actually taking CPT were 78.6%. This huge gap might be related to method used to the determination of the figures that this study used WHO clinical staging to determine eligibility. This study considered the intermittence of CD4 count service as a problem.

In Felege Hiwot referral hospital the proportion of patients on HIV care and treatment who had CD4 count at least once during last six months was 20.8% [12]. But this study showed from the observation of the laboratory it was identified that the CD4 counter machines were not functional, and the same was reported from the in-depth interview in spite of all these the proportion of patients on HIV care and treatment who had CD4 count at least once during last six months was 54.0 % and 38.1%.

In this study 132 (34.9%) of all clients involved in document review had CD4 counting service twice and paired t-test used to measure the mean differences between the initiation and last three months was 132.88 (95% CI (97.1, 168.6)  $t=7.35$ ). Study done at Zewditu hospital about 6% of patients who had CD4 tests performed from the baseline had CD4 >200 cells/mm<sup>3</sup> and in 6 months the proportion was 59%, increased to 73% and 83% at 12 & 24 months respectively [5]. Improvement in the proportion CD4 count greater than 200 has been observed in 6 month duration with a rate of change of 66% from the baseline [24]. In this study the proportion of working patients increased by 17.2% after their enrolment in the care and the proportion of ambulatory patients declined by half. Proportion of patients whose functional status of working at 12 months of ART was 21.4%. The finding is lower than a national

study that the proportion of working patients increased from 49.3% to 83.0% and ambulatory bed ridden patients reduced to 14.9% and 2.1% respectively. Nevertheless, The rate of change of working patients increased by 42% within 6 months duration of treatment while the rate of change of ambulatory and bedridden patients declined [24].

The average satisfaction level was 3.82 out of 5 P (54.6%) 95% CI (3.77, 3.87). The average level of satisfaction was 4.41 of 5 (54.6%). This is more likely than service characteristics and communication with a study in Felege Hiwot referral hospital showed that the average level of satisfaction was 3.9 out of 5 points & this accounted 78.0% of the study subjects involved in the exit interview [12]. The mean score for the overall satisfaction was 3.44 ( $\pm 0.84$ ). The least degree of satisfaction is observed for general cleanliness of the facility followed by provider's behavior towards the patient, waiting time between registrations and being seen by the provider [18].

A study done in Brazil was reported open lines of communication improve adherence to treatment and patients' acceptance of the disease as well as coping skills with the stigma of being HIV positive [17]. However, in this study the correlation coefficients for the three aspects of satisfaction in this study ranged between 0.51 and 0.78. All the correlation coefficients reached a statistically significant level  $p<0.001$ . No linear relation was observed between age and sex of respondents and overall satisfaction scores. This study was reported in the exit interview almost all of the interviewed persons (99.2%) reported that it didn't took them more than two months to visit the clinic again since their last visit. Contrary to the exit interview in this study the proportion of patients who have continued care is 52.6%, while a previous study in Felege Hiwot Referral Hospital the proportion of patients who have continued care was 70.9% [12]. In this study observation of the existence of infection prevention materials and practices at the delivery room was made and it was observed that all the necessary materials and practices were available in it. It is consistent with a study done at Bahir Dar Felege Hiwot hospital [12]. Dil Chora

referral hospital had two old CD4 counting machines during the visit but one CD4 counting machines was not functioning during the visit and it was also reported that the service was interrupted the previous two months. The same was reported by patients involved in the in-depth interview. But it was not reported in other studies [12, 14].

Infection prevention is one of the quality indicators for ART as stated in the national guideline for the treatment of patients with HIV/AIDS in Ethiopia. Quality indicators number 20 in the national guideline asks existence of infection prevention materials and practices at the facility [6]. Universal precaution materials were available; infection prevention practices and post exposure prophylaxis services were provided. Application of infection prevention procedures, and reasons for not conducting such procedures, Proper disposal of sharp objects and availability of proper disposal containers, washing hands with soap and water before and after performing was reported from other studies [14].

As the study involved in-depth interview with clients and exit interview of patients might have social desirability and recall bias. Obviously document review has its own drawbacks like incompleteness records. After considering these limitations, this study has attempted to conclude the findings.

## 5. Conclusion

The proportion of patients who are with a functional status of working at 12 months of ART was much more lower than nationally in six months, and proportion of working patients increased by 17.2%. Clients' satisfaction was an important indicator and determinant of quality for performance of process and health outcome, and average level of satisfaction was 3.82 out of five. Average satisfaction was influence by service providers' communication and service provision. Rating health as good or poor the day of interview was an independent predictor of satisfaction of patients. We recommend that Dire Dawa Dil Chora referral hospital administration and health bureau should mobilize resources to make CD4 counter machine available, integrating laboratory services, provide trainings and improve record

keeping to enhancing quality health care. Further researches should be encouraged in this area to determine cause and effect relationships.

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## 7. Competing interests

All authors read and approved the final manuscript

## 8. Authors' contributions

AE had made substantial contribution to conception, design or acquisition of data, analysis and interpretation of findings. The coauthors TG, BM and AG had revised the paper critically for important intellectual content.

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