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Pattern of HIV/AIDS in HAART Era in the Emergency Department of Tikur Anbessa Specialized Hospital and St. Pauls Hospital

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A Research Paper To Be Submitted To College Of Health Science, Emergency Department, Addis Ababa University In Fulfillment Of The Requirements For Specialty In Emergency Medicine And Critical Care

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ACRONYMS

AAU: Addis Ababa University

ABC: Abacavir

AIDS: Acquired Immunodeficiency Syndrome

ARV: Antiretroviral Therapy

CLD: Chronic liver disease

CNS: Central nervous system

DM: Diabetic mellitus

DDI: Didanosine

ED: Emergency Department

EDHS: Ethiopian Demographic and Health Survey

EFV: Efavirenz

FHAPCO: Federal HIV/AIDS Prevention and control office,

FMOH: Federal Ministry of Health

HAART: Highly Active Antiretroviral Therapy

HIV: human immunodeficiency virus

GI: Gastro-Intestinal

LPV/R: Lopinavir/ritonavir

MOH: Ministry of Health

NCD: non communicable disease

NVP: Nevirapine

OPD: out-patient department

PLHIV: patients living with HIV

TASH: Tikur Andessa Specialized Hospital

TB: tuberculosis

TDF: Tenofovir

UNAIDS: United Nation Agency for International Development

U.S.A: United States of America

WHO: World Health Organization

3TC: Lamivudine

ABSTRACT

Background: HIV/AIDS is one of the most destructive diseases mankind has ever faced. It brings with it profound social, economic and public health consequences. It has become one of the world's most serious health and development challenges. The aim of this study was to define the profile of attendances of HIV positive patients who presented to Emergency department.

Method: Cross sectional study was employed on adult PLHIV visiting emergency department (ED) at tertiary hospital in Ethiopia from February 1 to April 30 2019. Data analysis was performed by SPSS version 25 software. Descriptive statistics and Chi-square were utilized.

Result: There were a total of 87 patients. The mean age is 38.21(±10.5) years majority of them are between the age of 35 and 44 years. and male to female ratio almost 1:1. 10.3% were newly diagnosed. 50.6% had comorbidities. Only 79.3% were taking HAART, and 58.6% were WHO clinical Stage IV. 57.7% had visited ED for HIV infection related problems and TB CNS toxoplasmosis and esophageal candidiasis are the most common opportunistic infections. There is significant association between blood pressure and death; sex and occupation with advanced stage of the disease.

Conclusion: The findings revealed that middle age groups are at high risk reflecting important economic and social impacts. As a third of the PLHIV visited ED for HIV non related issues to facilitate early HIV diagnosis and early initiation of HAART, all stakeholders in the region facilitate HIV testing. More attention should be given for middle age group of PLHIV. HIV guideline should include treatment of associated comorbidities.

Keywords: Comorbidities, HIV, Mortality, PLHIV

CHAPTER 1

INTRODUCTION

HIV/AIDS is one of the most destructive diseases mankind has ever faced. It brings with it profound social, economic and public health consequences. It has become one of the world's most serious health and development challenges.(1) There are approximately 36.9 million people currently living with HIV and 35.4million people have died of AIDS-related causes since the beginning of the epidemic.(2) While new cases have been reported in all regions of the world, high risk population account for 95% of new infections occur in individuals that reside in low and middle-income countries, eastern Europe, central Asia, middle east and north Africa .16% of new infection are in eastern and central Africa(3) Most people living with HIV or at risk for HIV do not have access to prevention, care, and treatment, and there is still no cure.(4)

The incidence of HIV is declining in most regions. Worldwide, the number of people newly infected with HIV dropped 16 percent from 2010 to 2017. Still, 1.6 million people are newly infected by HIV each year.(2)

Eastern and southern Africa has the most serious HIV and AIDS epidemic in the world. In 2017, an estimated 19.6 million people were living with HIV, accounting for 53 % of the global total. In the same year, there were an estimated 800,000 new HIV infections and 380,000 AIDS-related deaths.(2)

HIV prevalence for sub-Saharan Africa is 4.7% but varies greatly between regions within the region as well as individual countries. For example, Southern Africa is the worst affected region and is widely regarded as the 'epicenter' of the global HIV epidemic. Swaziland has the highest HIV prevalence of any country worldwide (27.4%) while South Africa has the largest epidemic of any country - 5.9 million people are living with HIV. By comparison, HIV prevalence in West and East Africa is low to moderate ranging from 0.5% in Senegal to 6% in Kenya.(2)

Ethiopia is one of sub-Saharan Africa countries most affected by the HIV/AIDS pandemic. The HIV prevalence among adults age 15-49 in the 2016 EDHS is 0.9 percent; with 1.2% among females and 0.6 percent among males (6).

The HIV epidemic in Ethiopia is becoming more concentrated in urban areas. It is seven times higher than rural area (2.9 % and 0.4%). In Gambela the prevalence is as high as 4.8% single point HIV prevalence estimate in the 2016 EDHS. (6)

HIV prevalence may be expected to increase if AIDS mortality drops below the rate of new or imported infections, as may be starting to occur in larger cities in Ethiopia. There were approximately 18,000 (10,000-30,000) AIDS related deaths in 2016(UNAID).(5)

STATEMENT OF THE PROBLEM

The number of PLHIV has increased from 35.3 million in 2013 to 36.9 million in 2017, as a result of: continuing new infections, people living longer with HIV, and general population growth. In 2017, approximately 12.9 million PLWHIV in eastern and southern African countries were receiving ART. (1)The first HIV/AIDS cases in Ethiopia were reported in the mid-1980s. Since then, the epidemic has spread to the general population in both urban and rural areas. Compared with HIV-negative individuals, people with HIV had high rates of emergency department use, including potentially avoidable visits. These findings strongly support the need for comprehensive care for people with HIV. (7) HIV/AIDS remains a critical public health challenge in Ethiopia.

Proper knowledge on clinical presentation HIV in ED and disposition and effect of comorbidity in the outcome of patients will improve quality of care in the ED. When PLHIV visit the ED they need proper evaluation and investigation to do this guideline and policies are required. This needs correct of clinical picture and demographic data. There are few researches done in this population in of Ethiopia. Our research aims to assess pattern of HIV/AIDS in the ED and assist stakeholders on their subsequent action.

RATIONALE OF THE STUDY

The aim of this study was to define the profile of attendances of HIV positive patients who presented to Emergency department. In particular the study, desired to identify the clinical conditions with which these patients presented, and disposition.

Since TASH and St. Paul Hospitals are two of the largest tertiary referral hospitals in Ethiopia and it is the center where most of the subspecialties reside in therefore complicated cases get referred to these hospitals. Therefore, it would be a must to identify the epidemiologic profile and commonest clinical presentations and system affected in HIV-positive adults and to describe their final ED diagnoses. In addition, in this HAART era complications of the ARV and co morbidities might also be the reason to seek medical attention.

The hypothesis was that for HIV-positive adults in the HAART era, demographic, HIV-specific clinical (years since diagnosis/on antiretroviral therapy, current use/interruption of HAART) or laboratory (recorded recent CD4 count) factors are significantly associated with ED utilization within this hospital.

This study describes variables that may be potentially predictive of disposition in emergency department related to their HIV infection. Information obtained from this study will help to health care providers; especially emergency physicians easily access and treat HIV infected patients who present to the ED in early and close consultation with their primary care and infectious disease physicians.

CHAPTER 2

LITERATURE REVIEW

The dynamic of the epidemic has changed dramatically since the advent of highly active antiretroviral therapy (HAART). Despite the increasing availability of highly active antiretroviral therapy (HAART), the disease is second leading cause of death across Africa as WHO report. (24)

The number of PLHIV has increased from 35.3 million in 2013 to 36.9 million in 2017, as a result of: continuing new infections, people living longer with HIV, and general population growth. In 2017, approximately 12.9 million PLWHIV in eastern and southern African countries were receiving ART. (1)

The first HIV/AIDS cases in Ethiopia were reported in the mid-1980s. Since then, the epidemic has spread to the general population in both urban and rural areas. HIV/AIDS remains a critical public health challenge in Ethiopia.

Compared with HIV-negative individuals, people with HIV had high rates of emergency department use, including potentially avoidable visits. These findings strongly support the need for comprehensive care for people with HIV. (7)

The main role of Emergency Departments(ED) is to respond to the urgent health needs of the population by offering not only effective, efficient and equitable assistance, but also of high quality.(8) The vast majority of studies on HIV patients and ED refer to the rapid HIV diagnostic tests and their applicability in the ED. (9,10)Thus, very few studies have been carried out on determining the reasons of HIV positive patients for consulting an ED, the mortality rates and their incidence in the HAART era.

Clinical characteristics of HIV positive patients attending emergency department

A study done in USA at emergency facility of a tertiary care teaching hospital described the findings of clinical characteristics as the mean age of the study patients was 39 ± 5.3 (range 22 - 80) year and the mean duration of known HIV positivity was 17.4 ± 5.6 (range 1 - 84) months.

The most common acute complaints included fever (n=32, 35%), dyspnea or cough (n= 31, 34%), and gastrointestinal symptoms (n = 17, 18%), as well as pain-related or neurologic symptoms (n = 11, 12%) and dermatologic symptoms (n=7, 8%). (11)

Coming to our continent the South Africa study described the clinical characteristics as In the HIV-positive cohort; the median age of presentation was 37 years, with almost equal male-to-female distribution. Of the patients seen, 57.5% were referred and 68% of patients presented after hours. In total, 80% of patients were triaged as yellow code. (12)

Similarly, a study in Ethiopia showed the clinical characteristics as over two-thirds of the study subjects (N=278, 65.9%) were females with a female to male ratio of 2:1. About more than half of the patients (64.7%) were on first line HAART. Significant number of the PLHIV 42.9% had a CD4 count of <200 cells/ul, and 45.7% had a CD4 count between 200-499 cells/ul. The majority (42.4%) of the HIV patients coming to the emergency department were between the ages of 35-44 years. (13)

Epidemiology of Disease Burden in HIV-Infected Patients in Emergency department

Before HAART, hospitalizations in the HIV population were predominantly due to opportunistic infections and conditions related to the HIV-infected patient's poor immune response to non-opportunistic pathogens. More recent studies have found that although the number of hospital discharges among known HIV-positive patients has decreased from 249,000 in 1995 to 173,000 in2004, the majority of such hospitalizations are now in patients older than 40 years (67%). According to a study done in Pittsburgh, USA the spectrum of illness that may bring HIV-infected patients to the ED has changed and broadened. (14)

In a single-center study in a high-prevalence area, conducted from 2000 to 2005, the percentage of admissions because of Mycobacterium avium complex, Cryptosporidium parvum, and other late opportunistic pathogens decreased significantly, whereas those related to renal, oncologic (primarily lymphoma), and psychiatric ailments, as well as medication adverse effects, increased.(15) As categorized diagnoses, constitutional symptoms were the most common (n=38, 26.4%). A total of 51 patient-visits (56.0%) were admitted to the hospital, and the most common final diagnosis was pulmonary disease (n=22, 43.1%). The number of ED visits by patients with

active pulmonary tuberculosis was 15 (16.5%), which represented 22.4% of ED visits by patients with constitutional or respiratory symptoms. (16)

A study done in Spain on Reason for HIV Patients Consultation to the Emergency Department in the HAART Era: Incidence and Mortality during years 2000-2010, finds out that the infectious disease was the most frequent cause of visits to the ED; Respiratory infection is the first cause among infectious diseases. Neurological affectation was the most common cause of consultation due to non-infectious diseases. (17) The South African study done in 2014 also resulted that the predominant systems involved were the respiratory and central nervous systems, with pulmonary tuberculosis, community-acquired pneumonia and meningitis being the most common diagnoses. (12)

A multicenter study done in Ethiopia (2015) resulted that Hypovolemic shock secondary to diarrhea and vomiting (N=70, 16.7%), Pneumonia (N= 64, 15.2%), Anemia (N=52, 12.3%), Tuberculosis, Acute gastro-enteritis (N=35, 8.3%) and drug-induced liver injury (N=28, 6.6%) were the leading causes of ED visits among HIV infected patients.(13)

Disposition of patients from ED

The study in USA found out that 43 emergency visits (47%) resulted in hospitalization (including two patients who refused hospitalization and one urgent critical care death), contributing to 65% of a total of 66 AIDS hospitalizations at MH during the period. (11)

The Korea study found out that out of 91 visits to ED in five years of study period by PLHIV a total of 51 patient-visits (56.0%) were admitted to the hospital, 37(40.7%) discharged, 2(2.7%) died in ED, one (1.1%) was transferred.(16) According to South African study out of 382 (89%)patients were admitted to the general medical wards, 22(5.4%) were discharged,16(3.8%) were transferred to the regional level of care directly from the ED and ED mortality in the HIV-positive group was 1.9%, slightly higher than the overall ED mortality rate of 1%.

Co morbidities associated with people with HIV in the era of HAART

People living with HIV are at increased risk of developing a range of non-communicable diseases (NCDs), including cardiovascular disease, diabetes, chronic lung disease and some types of cancer. (18) With effective ART, people living with HIV are also living longer and experiencing NCDs associated with ageing. Both HIV and NCDs require health systems that can deliver effective acute and chronic care and support adherence to treatment.

Long-term cohorts show that patients who adhere well to ART have a near-normal life expectancy.(20) The subjects infected by HIV present a higher risk for the development of cardiovascular diseases, due to the high prevalence of cardiovascular risk factors and metabolic alterations concerning the use of antiretroviral therapy, besides the systemic immune activation which provokes endothelial inflammation and atherosclerosis.(21)

In the first six years of use of antiretroviral drugs there was an increase in the rates of Kaposi's sarcoma and lymphoma in PLHIV, particularly the ones which presented a low number of T-CD4 cells, while other types of cancer, especially the ones concerning the human Papilloma virus presented an average of 7% a year between 1 and 10 years.(22)

A cross-sectional study made in Ribera Petro, SP, Brazil, in order to identify the prevalence of co-infections and comorbidities in people living with HIV/AIDS,390 comorbidities were observed (78.3%), especially dyslipidemia 126 (25.3%), triglycerides 68 (13.7%), hepatitis C 68 (13.7%), oral candidiasis 60 (12.0 %), sexually transmitted disease 57 (11.4%) and tuberculosis 51 (10.2%). Depending on the different comorbidities, it is considered appropriate that special strategies to monitor are planned, for the diagnosis and early intervention. (23)

CHAPTER 3

OBJECTIVES

General objective

The aim of this research was to assess the demographic and disease profile of HIV-positive patients presenting to the ED, in the era of HAART.

Specific objectives

1. To identify demographic profile of HIV-positive patients.
2. To determine the burden of newly diagnosed HIV cases in emergency department
3. To identify the clinical profile of patients who are HIV-positive to the ED
4. To determine co morbidities.
5. To determine disposition of these patients.

CHAPTER 4

METHODOLOGY

Study area and period

The study was conducted at ED TASH and St. Paul Hospital that are located in Addis Ababa which is a capital city of Ethiopia. These are of the biggest tertiary teaching hospitals with an Emergency Department that is a center of excellence for the country. In average the ED of TASH 24,000 and St. Paul Hospital 18,000 patients visit yearly.
The study was conducted from February 1 to April 30, 2019.

Study design

The study design was cross sectional study.

Population

Source population

The source population is all patients attending the adult Emergency Department of TASH and St. Paul Hospital during the study period.

Study population

All clinically confirmed HIV cases who seek emergency care in TASH and St. Paul Hospital adult ED during the study period were interviewed.

Inclusion and exclusion criteria

Inclusion criteria

All adult HIV positive patients, who seek medical care in TASH and St. Paul Hospital adult Emergency Department during the study period, were included.

Exclusion criteria

HIV Patients presenting with trauma are excluded.

Patient who refuse to give consent

Pediatric age group

Sampling Technique and sample size

Sample size

All those clinically confirmed HIV-positive patients and all patients screened for HIV and become positive in ED during the study period.

Sampling technique

Convenient sampling technique was used.

Data collection tools and procedure

The data collection was done by interviewing and chart reviewing using a structured questioner after consent was taken. It was done by nurses who are working in the ED after they had briefing on the importance of the data and how to do it.

Measurement variables

Dependent variable

Clinical presentations related to HIV infection (stage of the disease)

ED disposition (death)

Independent variable

Socio demographic (age, sex)

Acuity of illness

Duration of illness

CD4 count

ART and chemoprophylaxis information

Co morbidities

Operational definition

EMERGENCEY ILLNESS: Disease that leads patients to life threatening condition

HIV RELATED ILLNESS: HIV /AIDS disease progression leads patients to life threatening condition

Data entry and analysis

All data were collected and transferred onto an SPSS 25.0.

Statistical analysis was cleaned, edited and analyzed by using SPSS 25.0 version statistical software.

Data Quality Assurance

During the data collection procedures, all the collected data were reviewed and checked daily for its completeness.

Result Dissemination

The result of this study will be disseminated and presented to stakeholders i.e., department of emergency medicine of Tikur Anbessa Hospital and St. Pauls and Federal minister of health.

Ethical Considerations

Permission to carry out the study was obtained from Addis Ababa University College of health science, department of Emergency Medicine.

CHAPTER 5

RESULT

During our three month of study period in TASH and St. Paul hospital emergency department we have found 87 HIV positive patients visiting for non-trauma related complaints. Out of the 87 questionnaires that were administered, all were correctly completed making a response rate of 100% and were clinically confirmed HIV patients. Out of 87 clinically confirmed HIV patients, 40 (46%) were Males and the remaining 47(54%) were females, giving a female to male ratio of 1:1.17. The patients ages ranged from 13 to 57 years with the mean of 38.21 (±10.5) years 40.0 were the median age, 40 were the mode. 34 (39.1%) were between age of 35-44 years. 18 (20.7%) of the studied patients were daily laborers followed by merchants 13 (14.9%), and government employee, 10(11.5%). The common educational status was secondary school 31(35.6%) followed by primary school 19(21.8%) and can't read and write 15(17.2%). The study shows that most 52 (59.8%) clinically HIV confirmed patients were married followed by 21 (24.1%) single and 14 (16.1%) divorced individuals. Table 1

Table 1: Socio demographic characteristics of patients

Variables		Number (87)	Percent (%)
Age	13-24	10	11.5
	25-34	19	21.8
	35-44	34	39.1
	45-54	17	19.5
	>55	7	8
Sex	Male	40	46
	Female	47	54
Educational status	Cannot read and write	15	17.2
	Can read and write	13	14.9
	Primary school	19	21.8
	Secondary school	31	35.6
	Higher education	9	10.3
Marital status	Single	21	24.1
	Married	52	59.8
	Divorced	14	16.1
	Widowed	0	0
Occupation	Daily laborer	18	20.7
	Merchant	13	14.9
	Government employed	10	11.5
	Farmer	2	2.3
	Driver	7	8
	Self employed	10	11.5
	Other	27	31

Clinical characteristics of the study subjects

Regarding the duration of disease since the time of diagnosis, from the total study subjects 26(29.9%) were less than 5 year, 25(28.7%) were 5-10 years, 27(31%) were>10 years and the remaining 9(10.3%) were newly diagnosed . Figure 1

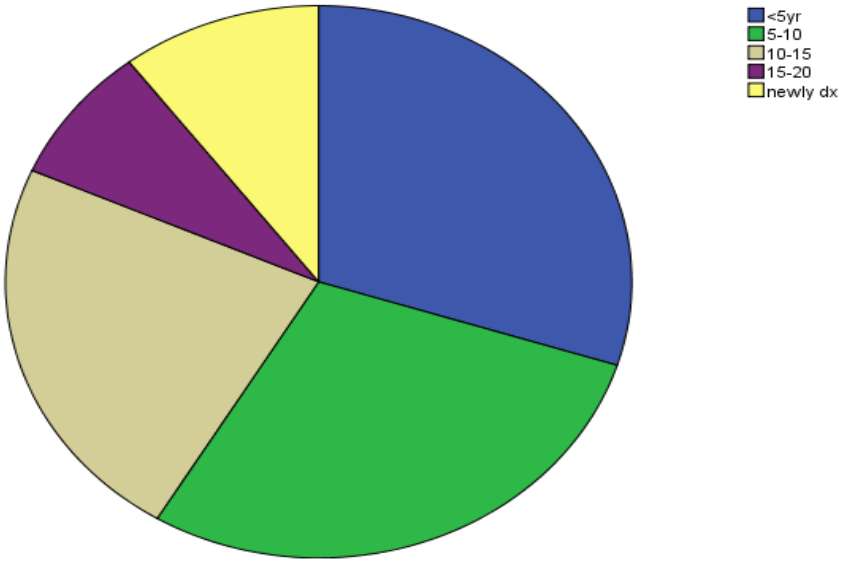


Figure 1: Duration of illness

Among the PLHIV included in the study at the beginning of HAART 68(78.2%) were on first line HAART regimen (3tc+ tdf+ efv/nvp) and 8(9.2%) were on second line HAART regimen (ABC+ddi+Lpv/r), the remaining 11(12.6%) were not receiving HAART.

Among the respondents 21 (24.1%) of them were on cotrimoxazole prophylaxis, 5(5.7%) were on INH prophylaxis treatment and 15(17.2%) were on fluconazole prophylactic therapy when HAART is initiated.

Concerning the base line functional status of patients, 36(41.4%) were working, 31(35.6%) were able to self-care and 17(10.4%) were bed ridden.

Among responders 44(50.6%) have co morbidities. 14(16.1%) had Neurologic conditions not related to HIV, 10(11.5%) had renal issues, 5(5.7%) had cardiac conditions the remaining is mentioned in graph below. Figure 2

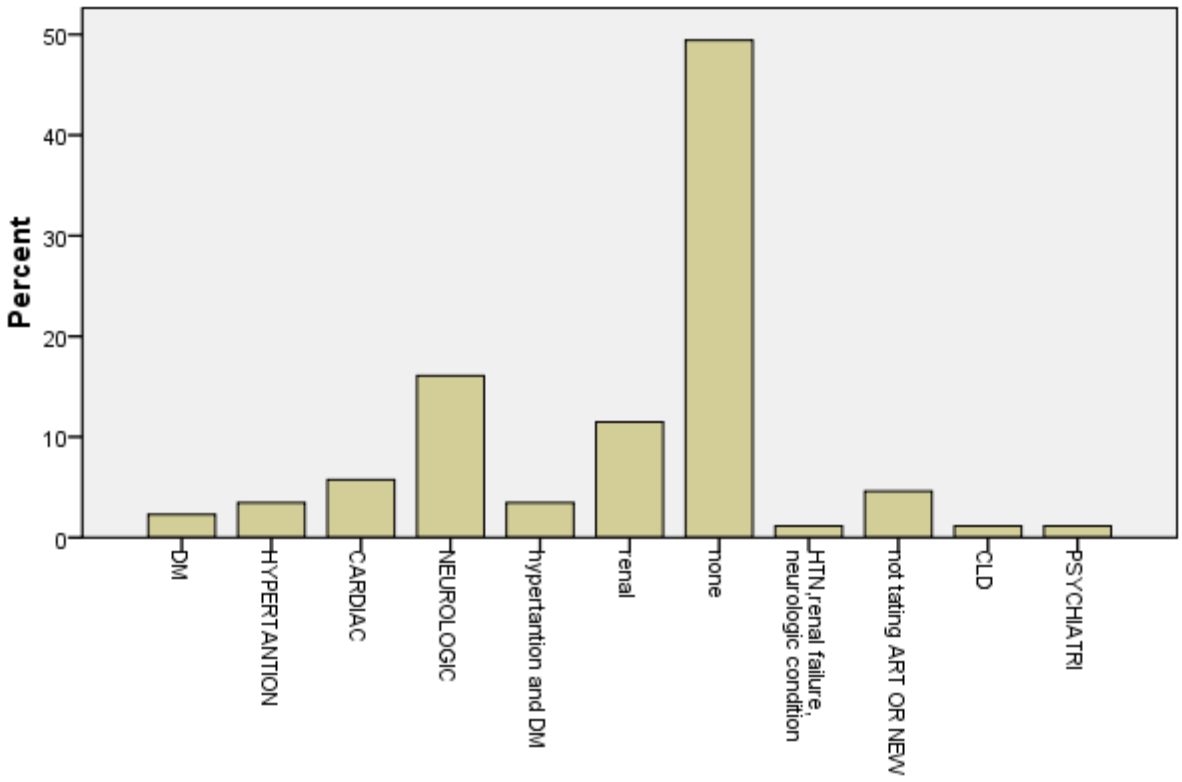


Figure 2: Medical comorbidities in PLHIV visiting ED

Among responders on ED presentation 69(79.3%) were taking HAART and the remaining 18(20.7%) were not taking HAART (both defaulters and newly diagnosed)

Among the PLHIV included in the study 49(56.3%) were on first line HAART regimen (3tc+ tdf+ efv/nvp) and 20(21.8%) were on second line HAART regimen (ABC+ddi+Lpv/r), the remaining 18(20.7%) were not receiving HAART. Figure 4

The clinical WHO stage of the disease of HIV patients at ED visit, 25(28.7%) were Stage I, 6(6.9%) were Stage II, 5(5.7%) were Stage III and 51(58.6%) were Stage IV. figure 3

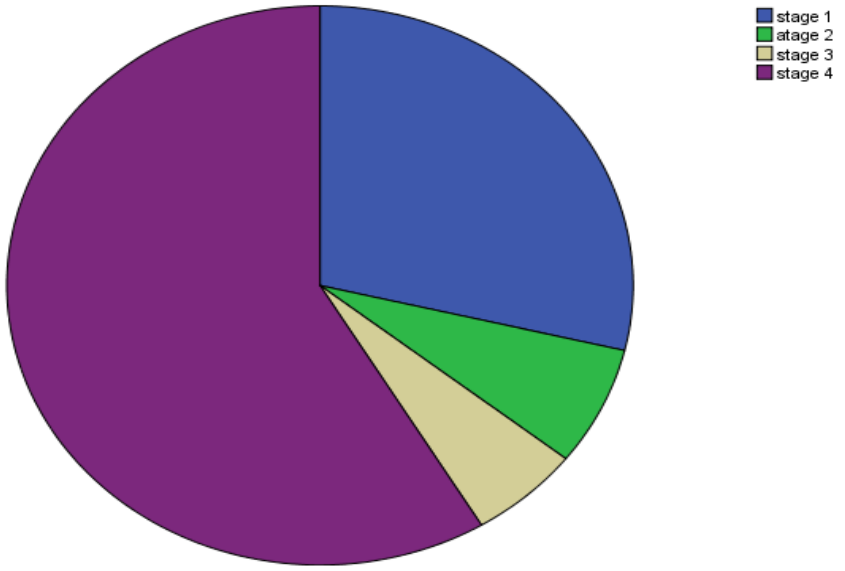


Figure 3: WHO Stages of PLHIV on ED visit

The recent CD4 count of the PLHIV on ED , of the total 87 patients 15(17.2%) had a CD4 count of <200 cells/ul, 6(6.9%) had a CD4 count between 200-350 cells/ul ,19(21.8%)had CD4 count >350 cells/ul and for the remaining 47(54%) it was unknown.

Concerning the functional status of patients on ED visit, half 47(54%) were bed ridden, a third 31(35.6%) were able to self-care and 9(10.3%) were working.

Among the responders 34(43.7%) had BP measurement <90/60, 43(49.4%) had BP between 90-120/60-80 and the remaining 10(11.5%) had BP measurement >120/80.

Concerning temperature records most 74(85.1%) were normothermic, 11(12.6%) had low grade fever, 1(1.1%) had hypothermia and the other one was having high grade fever.

Concerning the PLHIV on ED visit most 59(67.8%) were maintaining their saturation the remaining 28(32.2%) were desaturating with atmospheric oxygen.

Among the responders most 57(65.5%) had tachycardia and the rest 30(34.5%) had normal heart rate.

Concerning respiratory rate more than a third 34(39%) had tachypnea and remaining 53(60.9%) had normal respiratory rate.

Among the responders chief compliant on ED visit common chief compliant is shortness of breath and cough 18(20.7%) and 17(19.5%) respectively then GI compliant 17(19.5%) the rest is mentioned in the figure below. Figure 4

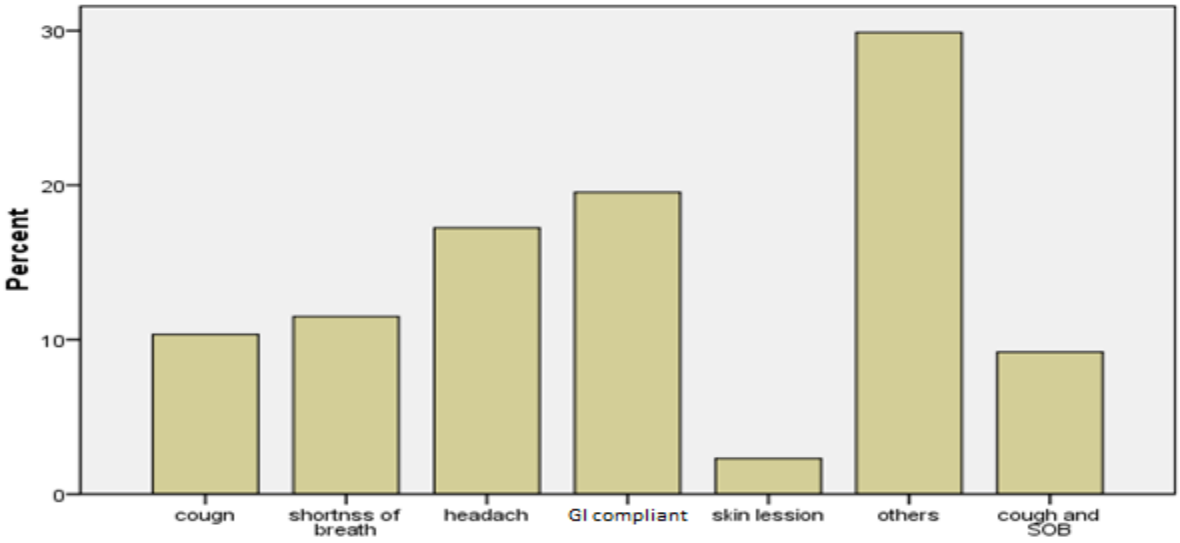


Figure 4: Chief complaints of PLHIV on ED visit

Among the responders most 50(57.7%) had visited ED for HIV infection related problems the remaining 37(43.3%) visited ED for problems not related to HIV infection. Of 50 HIV infection related ED visits 41(82%) had opportunistic infection, 7(14%) had opportunistic malignancy and the rest 2(4%) had both.

Concerning affected system with HIV related illness CNS, respiratory system and GI are the most commonly affected 12(27.9%) the rest is mentioned the table. Table 2

Table 2: Systems affected by HIV related infection in PLHIV visiting ED

System	Number	Percentage %
CNS	12	27.9
Respiratory	12	27.9
GI	12	27.9
Hematology	3	7

Integumentary	1	2.3
CVS	3	7

Concerning opportunistic infection TB (both pulmonary and extra-pulmonary), CNS toxoplasmosis and esophageal candidiasis are frequently encountered infections 8(18.6%),6(14%), and 4(9.3%) respectively.

concerning the most common diagnosis in PLHIV at ED visit 10(23.3%) sepsis followed by 8(18.6%) TB and 6(14%) CNS toxoplasmosis.

Concerning disposition of PLHIV after the ED visit 12(13.8%) died, 33(37.9%) kept at ED for a while and discharged home, 26(29.9%) admitted and the rest 16(18.4%) discharged home after front evaluation. Figure 5

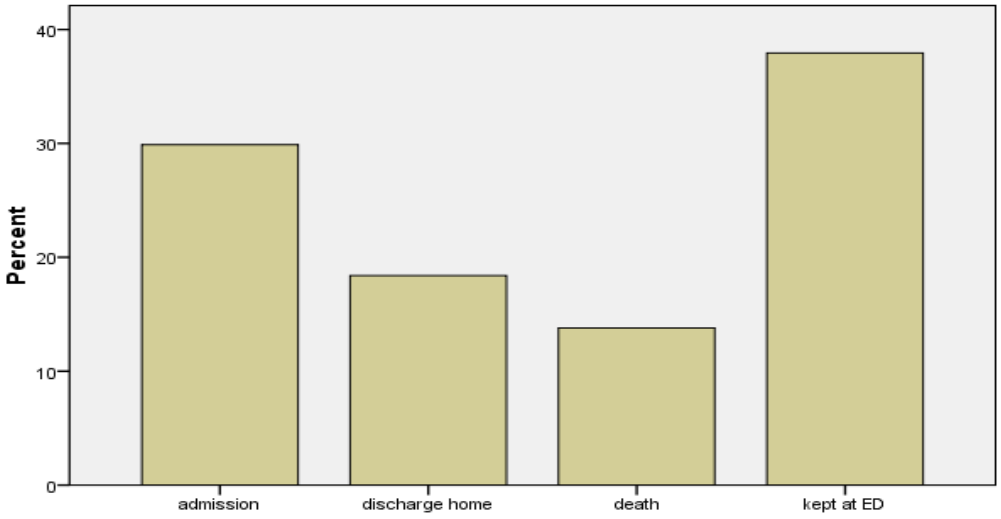


Figure 5: Disposition of PLHIV after ED visit

Concerning association between variables Binary logistic regression was implemented. There was significant association between age and blood pressure with death. There was significant association between sex and occupation with advanced stage of the disease (stage IV). Table 3

Table 3: Association between variables

	Death			
	COR (95%CI)	**P-value**	**AOR (95%CI)**	**P-Value**
AGE	1.843(1.002, 3.387)	.049	1.923(.956,3.868)	.067
BLOOD PRESSURE	.278(.086, .905)	.034	.237(.061,.920)	.037
	Stage IV			
SEX	3.714(1.483,9.302)	.005	.312(.119,.816)	.018
OCCUPATION	.815(.671,.989)	.039	.864(.698,1.069)	.179

CHAPTER 6

Discussion

This study is conducted to assess the socio-demographic features of HIV positive patients, assess the baseline characteristics and the Clinical features of HIV related emergency diseases in TASH and St. Paul Hospitals. This study describes variables that may be potentially predictive of disposition in emergency clinic related to HIV related emergency conditions in the era of HARRT ,and the information obtained from this study will help to health care providers, policy makers, and other stakeholders in Ethiopia in the provision of required diagnostic and therapeutic facilities in hospitals according to prevalent diseases, and in the preemptive management HIV-related clinical complications, as well as in the prevention of HIV-related morbidities and mortalities.

The result of the study showed half of the patients 54% were females and 46% were Males giving a female to male ratio of 1:1. The patients ages ranged from 13 to 57 years with the mean of 38.21(±10.5) years and the majority 39.1% of the HIV patients coming to the emergency department were between the ages of 35-44 years. Similar study conducted in Addis Ababa 3yrs ago showed most of the patients who were seen at emergency departments for HIV related illnesses were between the ages of 35 to 44 years old (13). This indicates that HIV infection prevalence is still very high and represents a major socioeconomic impact, since increased morbidity is observed in working population.

Regarding the duration of disease since the time of diagnosis, one third were with disease duration <5years 29.9 %, followed by 6-10yrs 28.7%, 10.3% were newly diagnosed. In study done in South Africa the newly diagnosis was 6.2 % (26). The difference might be we have smaller study population and we use clinical sign and symptom to request for HIV test although it misses asymptomatic patents. Our study showed among the PLHIV half of the patients 56.3% were on first line HAART followed by patients 21.8% second line HAART regimen rest 20.9% not receiving HAART regimen.

Among the respondents 24.1% of them were on cotrimoxazole prophylaxis, 17.2% were on fluconazole prophylactic treatment and few of PLHIV 5.7% were receiving INH prophylaxis

therapy. Concerning the functional status 10.3% were working, 35.6 % were able to self-care, 54% were bed ridden. It shows the socially and economically debilitated by the illness.

The study also identified that from the total PLHIV who presented with one kind of emergency illness significant number of the PLHIV 54% had unknown CD4 count,17.2% had a CD4 count of <200 cells/ul, 6.9% had a CD4 count between 200-350 cells/ul, and 21.8% had a CD4 >350 cells/ul. From the study in USA only 9.7% had unknown CD4 count this difference might be due to educational level of our study subjects which half of them are below secondary school. (27) Concerning the WHO clinical stage of the disease for PLHIV coming to ED, most 58.6%were Stage IV, 28.7% were Stage I, 6.9% were Stage II, and 5.7% were Stage III.

The study also shows vital sign derangement in people living with HIV. Among the responders 43.7% had a blood pressure measurement <90/60, 11.5% had >120/80 and the rest are normal. Concerning oxygen saturation, a third 32.2% desaturate with atmospheric oxygen; and 39% of the responders had tachypnea. This shows how much critical patients are. As Triage scoring system is not sensitive for emergent case of ED visit. (30)

Concerning the chief complaints commonly encountered complaints 40.2% are respiratory, 20.7% was shortness of breath and 19.5% was cough, 19.7 % had gastro-intestinal complains, 17% had headache. On study done in USA it shows similar finding. (11) Among the responders most 57.7% visited emergency department for HIV related illnesses. Of this subject 82% had opportunistic infection 14% had opportunistic malignancy and the rest 4% had both.

The study shows that respiratory, gastro-intestine and central nervous system are equally affected 27.9%. 7% of study subjects had hematologic problem and other 7% had cardiovascular problem. When we see the pattern of common opportunistic infection, the study showed that majority of the respondents were treated for TB 18.6%, CNS toxoplasmosis 14%, esophageal candidiasis 9.3%. This is comparable to a study done in Dawro zone hospital in Ethiopia. (28)

Among responders half 44(50.6%) have co morbidities. 14(16.1%) had Neurologic conditions not related to HIV, 10(11.5%) had renal issues, 5(5.7%) had cardiac conditions. In study done in Nairobi Kenya non communicable disease incidence in PLHIV was 11.9%. (29) This difference

might be due to the Nairobi study is not done in ED and our study was done at tertiary center were more complicated cases get seen.

Concerning disposition 13.8% died in the emergency department 37.9% kept are ED for a while, 29.9% admitted and the rest 18.8% discharged home after front evaluation. The mortality is comparable with the study done in USA. (11)

Concerning association there is significant association between blood pressure and death, sex and occupation with advanced stage of the disease (stage IV). Similar to study done in Kenya showed both hypotension and hypertension is associated with higher mortality. (31)

From the result of the study it can be seen that HIV-positive patients are susceptible to a variety of life-threatening conditions. Diagnosis and management of HIV infected patients require knowledge of the disease ‘s pathology and the life-threatening complications associated with it. Moreover, it provides emergency physicians easily access and treat HIV infected patients who present to the Emergency Departments as early as possible.

CHAPTER 7

Conclusion

HIV-positive patients are susceptible to a variety of life-threatening conditions including tuberculosis, fungal infection, diarrhea, malignancies.

The findings indicate that HIV/AIDS patients have a frequent need for emergency care and most HIV/AIDS hospitalizations are emergency-related. The acute problems of these patients are related to TB (both pulmonary and Extra-pulmonary), CNS toxoplasmosis and esophageal candidiasis. The findings revealed that middle age groups are at high risk of emergency illness are well documented in many reviews on the subject. This may reflect important economic and social impacts as these are people also in their productive age group. It also has implications for the design and implementation of more targeted interventions. As a third of the PLHIV visited ED for HIV non related issues to facilitate early HIV diagnosis and early initiation of HAART, all stakeholders in the region must make concerted effort to expand and implement voluntary counseling and testing as well as the provider-initiated testing and counseling when necessary. An HIV associated emergency should therefore be a strong consideration for any critically ill patients.

Recommendation

- ✓ Develop a tool to pick HIV positive patients in addition to clinical features
- ✓ HIV guideline should include treatment of associated comorbidities
- ✓ Capacity building and technical support for the staffs and emergency departments enabling them to easily identify, diagnose and treat HIV related emergency illnesses promptly
- ✓ More attention should be given for middle age group of people living with HIV/AIDS
- ✓ Awareness creation about HIV AIDS
- ✓ Farther study should be done on triage scoring by increasing the value give for both hypotension and hypertension

Strength and Limitation of the study

Strength

This study is conducted to assess the socio-demographic features of HIV positive patients, assess the baseline characteristics and the Clinical features of HIV related emergency diseases in PLHIV visiting TASH and St. Paul Hospitals emergency department Addis Ababa, Ethiopia. This study describes variables that may be potentially predictive of disposition from emergency department related to HIV related emergency conditions in the era of HARRT ,and the information obtained from this study will help to health care providers, policy makers, and other stakeholders in Ethiopia in the provision of required diagnostic and therapeutic facilities in hospitals according to prevalent diseases, and in the preemptive management HIV-related clinical complications, as well as in the prevention of HIV-related morbidities and mortalities. This study also shows how significant number of PLHIV had comorbidities.

Limitation

Despites its findings, this study had its limitations

1. Small population is were included in the study
2. Namely the design of the study, cross-sectional only incorporates one single moment (3month).
3. Non representativeness due to the non-probabilistic convenience sampling technique
4. Tendency for bias.
5. It doesn’t include trauma cases
6. It was better to include pediatric age group

References

1. Global HI. AIDS statistics—2018 fact sheet
2. UNAIDS. Report on the Global AIDS Epidemic; 2017
3. UNAIDS. Core Slides: Global Summary of the AIDS Epidemic; 2017
4. WHO/UNAIDS/UNICEF. Global update on HIV treatment 2016.
5. UNAIDS (2018) 'The Gap Report 2018'
6. Ethiopia Demographic and Health Survey2016.
7. Ng R, Kendall CE, Burchell AN, Bayoumi AM, Loutfy MR, Raboud J, Glazier RH, Rourke S, Antoniou T. Emergency department use by people with HIV in Ontario: a population-based cohort study. CMAJ open. 2016 Apr;4(2):E240.
8. Miro O, Jimenez S, Alsina C, Javier FT, Sanchez M, Borras A, Milla J. Unscheduled revisits in medical emergency units at the hospital: incidence and related factors. Medicina clinica. 1999 May;112(16):610-5.
9. Fincher-Mergi M, Cartone KJ, Mischler J, Pasieka P, Lerner EB, Billittier IV AJ. Assessment of emergency department health care professionals' behaviors regarding HIV testing and referral for patients with STDs. AIDS patient care and STDs. 2002 Nov 1;16(11):549-53.
10. White DA, Scribner AN, Martin ME, Tsai S. A comparison of patient satisfaction with emergency department opt-in and opt-out rapid HIV screening. AIDS research and treatment. 2012;2012.
11. Chang R, Wong G, Gold J, Armstrong D. HIV-related emergencies. Journal of general internal medicine. 1993 Sep 1;8(9):465-9.
12. Naicker B, Maharaj RC. HIV in acute care: a review of the burden of HIV-associated presentations to an Emergency Department. South African Family Practice. 2015 Aug 22:1-5.
13. Marye S. A Study on the assessment of HIV related emergency visit during the HAART era in six public hospitals of Addis Ababa. Jun 2015.
14. Venkat A, Piontkowsky DM, Cooney RR, Srivastava AK, Suares GA, Heidelberger CP. Care of the HIV-positive patient in the emergency department in the era of highly active antiretroviral therapy. Annals of emergency medicine. 2008 Sep 1;52(3):274-85.

15. Pulvirenti J. Changes in HIV-related hospitalizations during the HAART era in an inner-city hospital. The AIDS reader. 2007 Aug 1;17(8):390-.
16. Kim TY, Suh GJ, Kwak YH. Clinical features of emergency department visits by patients infected with human immunodeficiency virus and need for infection control. Journal of The Korean Society of Emergency Medicine. 2005 Aug 1;16(4):458-66.
17. Camón S, Perelló R, Escoda O, Escoda R, Aguilar N, Saubi N, López C, Quirós C, Castañeda M, Martínez E. Reason for HIV patients consultation to the emergency department in the HAART era: incidence and mortality. Journal of AIDS and Clinical Research. 2014;5(9).
18. Muronya W, Sanga E, Talama G, Kumwenda JJ, van Oosterhout JJ. Cardiovascular risk factors in adult Malawians on long-term antiretroviral therapy. Transactions of the Royal Society of Tropical Medicine and Hygiene. 2011 Nov 1;105(11):644-9.
19. World Health Organization. Nutrient requirements for people living with HIV.
20. Johnson LF, Mossong J, Dorrington RE, Schomaker M, Hoffmann CJ, Keiser O, Fox MP, Wood R, Prozesky H, Giddy J, Garone DB. Life expectancies of South African adults starting antiretroviral treatment: collaborative analysis of cohort studies. PLoS medicine. 2013 Apr 9;10(4):e1001418.
21. Hemkens LG, Bucher HC. HIV infection and cardiovascular disease. European heart journal. 2014 Jan 9;35(21):1373-81.
22. Yanik EL, Napravnik S, Cole SR, Achenbach CJ, Gopal S, Olshan A, Dittmer DP, Kitahata MM, Mugavero MJ, Saag M, Moore RD. Incidence and timing of cancer in HIV-infected individuals following initiation of combination antiretroviral therapy. Clinical Infectious Diseases. 2013 Jun 4;57(5):756-64.
23. Righetto RC, Reis RK, Reinato LA, Gir E. Comorbidities and co-infections in people living with HIV/AIDS. Revista da Rede de Enfermagem do Nordeste. 2014;15(6).
24. World Health Organization. World health statistics 2018. World Health Organization; 2018.
25. Oku AO, Owoaje ET, Ige OK, Oyo-ita A. Prevalence and determinants of adherence to HAART amongst PLHIV in a tertiary health facility in south-south Nigeria. BMC infectious diseases. 2013 Dec;13(1):401.

26. Hansoti B, Stead D, Parrish A, Reynolds SJ, Redd AD, Whalen MM, Mvandaba N, Quinn TC. HIV testing in a South African Emergency Department: A missed opportunity. PloS one. 2018 Mar 13;13(3):e0193858.
27. Venkat A, Shippert B, Hanneman D, Nesbit C, Piontkowsky DM, Bhat S, Kelly M. Emergency department utilization by HIV-positive adults in the HAART era. International journal of emergency medicine. 2008 Dec;1(4):287.
28. Solomon FB, Angore BN, Koyra HC, Tufa EG, Berheto TM, Admasu M. Spectrum of opportunistic infections and associated factors among people living with HIV/AIDS in the era of highly active anti-retroviral treatment in Dawro Zone hospital: a retrospective study. BMC research notes. 2018 Dec;11(1):604.
29. Achwoka D, Waruru A, Chen TH, Masamaro K, Ngugi E, Kimani M, Mukui I, Oyugi JO, Mutave R, Achia T, Katana A. Noncommunicable disease burden among HIV patients in care: a national retrospective longitudinal analysis of HIV-treatment outcomes in Kenya, 2003-2013. BMC public health. 2019 Dec;19(1):372.
30. Haukoos JS, Witt MD, Zeumer CM, Lee TJ, Halamka JD, Lewis RJ. Emergency department triage of patients infected with HIV. Academic emergency medicine. 2002 Sep;9(9):880-8.
31. Bloomfield GS, Hogan JW, Keter A, Holland TL, Sang E, Kimaiyo S, Velazquez EJ. Blood pressure level impacts risk of death among HIV seropositive adults in Kenya: a retrospective analysis of electronic health records. BMC infectious diseases. 2014 Dec;14(1):284.

ANEX I: Information and consent form

Information sheet

Greetings! My name is ……..I am health personnel working in emergency department now I am collecting data from patient and patient card for the research being conducted to assess the prevalence of HIV related emergency diseases in the HAART era , by Dr Kirubel Teshome(MD) he is a third year emergency and critical care medicine resident in Addis Ababa university. The study will be used to directly/Indirectly expect its burden, economic losses due to not working and HIV related emergency infection occurrence. The evidence is expected to be used by governmental and nongovernmental organization working HIV/AIDS or mainstreaming it in order to inform policy makers and medical practitioners. The data which is necessary for the study will be taken from patient and patient chart therefore; your willingness to use the recorded data in this study will be helped to achieve the stated benefits of the study and participation in the study is seen as vital citizenry and societal opportunities as well as contributions. If you have any question about this study you may ask me or the principal investigator.

Dr Kirubel Teshome

Tel: +251910007783

Consent form

Based on the purpose and objectives of the study, you are selected as one of study subject by n chance. The investigator employed me for this data collection to maintain your data strictly confidential. As the study will be conducted through review patient medical record and from the patient, it will not cause any harm as far as the confidentiality is kept. The information will be taken when you give permission, and participation is totally voluntary. Your name and other personal identifiers will not be recorded on data collection form and the information that you give us will be kept confidential and will also be used for this study purpose only. You have full right not to let your information from you and on chart to be used for this study. But the information that would be taken will be quite useful for the study. You will not face any problem if you do not allow the information to be taken from your charts and you will not also be denied of getting any medical services from the hospital. On the other hand, there is no any special benefit by allowing your chart to be used in the study. Are you willing to let your information to be used for this study?

1. Not willing to extract data……. (End the session with thanks)

2. Yes willing to extract (Appreciate and proceed to extract data)

Name and signature of the data collector which shows that the respondent has consented (verbally) to take part in the study ……. Signature……

Super visor ‘s Name……. signature…….

Name of hospital…….

ANEX II: Questioner

Questioner

Part I

1. Age

2. Sex

    1. Male

    2. Female

3. Marital status

    1. Married

    2. Divorced

    3. Single

    4. Widow

4. Education level

    1. Can’t read and write

    2. Can read and write

    3. Elementary

    4. High school and preparatory

    5. Degree and others

5. Occupation

    1. Government employee

    2. Daily laborer

3. Merchant

4. Farmer

5. Driver

6. Self employed

7. Other

Part II

Clinical condition at the beginning of treatment and then after

6. When is the patient diagnosed with RVI

1. Mention the time

2. Didn't know

7. Clinical condition now

1. Symptom free and not taking medication

2. Symptomatic but not taking medication

3. Symptomatic and taking the medication

4. Asymptomatic but taking the medication

8. Clinical condition at the start of medication

1. Pneumonia

2. Weight loss

3. Chronic diarrhea

4. TB

5. Meningitis

6. Other (mention)

9. Medical comorbidities

1. Diabetes

2. Hypertension

3. Cardiac illness

4. Renal failure not related to HIV

5. Neurologic not related to HIV

10. At the beginning of treatment functional status of the patient

1. Can work

2. Can self-care but doesn't work

3. Bed ridden

Part III

Base line lab and ART and prophylaxis

11. Are you taking ART?

1. Yes

2. No

12. If yes is answer in the above question what medication

1. First line

2. Second line

3. Other

13. Did you take prophylaxis?

    1. INH

    2. Cotrimoxazale

    3. Fluconazole

Part IV

Current clinical condition when he/she comes to ED

14. Is the patient taking ART?

    1. Yes

    2. No

15. If the answer is yes

    1. First line

    2. Second line

    3. Other

16. WHO stage

    1. Stage 1

    2. Stage 2

    3. Stage 3

    4. Stage 4

17. Current CD 4 count

18. Current functional status

    1. Working

2. Can self-care but don’t work

3. Bed ridden

Part V

Clinical condition when they present to emergency

19. Vital sign

    1. BP

    2. Temperature

    3. Oxygen saturation

    4. Heart rate

    5. Respiratory rate

20. Chief compliant of the patient

    1. Cough

    2. Shortness of breath

    3. Headache

    4. Nausea/ vomiting/diarrhea

    5. Dysuria

    6. Vaginal/ urethral discharge

    7. Skin lesion

    8. Other mention

21. Diagnosed illness

22. Disposition

1. Admission

2. Discharge home

3. Death

4. Kept at ED

5. Transfer to other hospital

Annex III: Assurance of investigator

I, the undersigned candidate agree to accept responsibility for the scientific and technical conduct of the research project and for provision of required progress reports as per terms and conditions of the research and publications office of the Addis Ababa university

Name of investigator: Dr Kirubel Teshome

Approval of the advisor

Advisors Name: Dr Hiywot Engida Dr. Tilahun Jiru

Signature:_____ _____

Date:_____ _____