PREVALENCE OF INTESTINAL PARASITES AMONG HIV INFECTED PATIENT WHO ARE TAKING ANTIRITROVIRAL TREATMENT AT ALEM KETEMA ENAT HOSPITAL, NORTH SHOWA, ETHIOPIA.



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JIMMA UNIVERSITY

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DEPARTMENT OF MEDICAL LABORATORY SCIENCE AND PATHOLOGY

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# ABSTRACT

***Background****: -One of the major health problems among HIV sero-positive patients are superimposed infections due to the deficient immunity. Furthermore, intestinal parasitic (IP) infections, which are also one of the basic health problems in tropical regions, are common in these patients. Infection by various forms of intestinal parasites has been the hall mark of HIV since the beginning of the epidemic.*

***Objectives****: -To study the prevalence of intestinal parasitic infection among HIV patients who are taking antiretroviral treatment (ART) in Alem Ketema Enat Hospital, North showa, Ethiopia from April 1-15,2016.*

***Method****: -: A Cross-sectional study was conducted from April 1-15 at Alem Ketema Enat hospital, North Showa Ethiopia. The study was included a total 164 study subject. Socio demographic and clinical data was collected by structured questioners. Pea size of stool was collected to determined prevalence of intestinal parasite and by using normal saline examined under microscope.*

***Result****: A total of 141 stool specimens were collected of which 32(22.7%) respondents were affected with intestinal parasites and 109(77.3%) were not found any intestinal parasitic infection. From all participants 46% were female and 54 % were male. The two most prevalent intestinal parasites in this study were A.lumbricoides (25%) and Tenia species (25%). Relatively* higher prevalence of intestinal parasites was observed in the age group 15-64 years. *There was risk factor for this area was untrimmed finger nail and hand washing after defecation.*

***Conclusion:*** *In this* study*, illiterate were highly affected than the other and infections were most probably caused by* *untrimmed finger nail and hand washing after defecation.*

***Recommendation:*** Attention should be given to strengthen the laboratory services for intestinal parasite investigation and diagnosis in Alem ketema enat Hospital. Health education about intestinal parasite transmissions and prevention should be given.

***Keywords****: HIV/ AIDS, intestinal parasite, prevalence*

# 

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# ABBREVIATION OR ACRONMY

**AIDS** - Acquired Immunodeficiency Syndrome

**ART** - Anti Retroviral Treatment

**CD4 -** Cluster for Differentiation

**HIV** - Human Immunodeficiency Virus

**HTLV -** Human Thymus Lymphocyte Virus

**IP –** Intestinal Parasite

**UNAIDS**- United Nation Program on HIV/AIDS

# CHAPTER ONE

# 1. INTRODUCTION

## 1.1 BACKGROUND

HIV infection is a serious problem throughout the world. HIV appeared to have been introduced to Ethiopia in 1984, at the time when HIV had already assumed epidemic proportions in other sub-Saharan African countries. The prevalence of intestinal pathogens among HIV infected individuals has dramatically decreased in countries where antiretroviral agents are widely available. However, in most African countries, where few patients have access to antiretroviral treatment (ART), intestinal pathogens still represent a frequent cause of diarrhea, wasting and weight loss (1).

Gastrointestinal problem resulting from intestinal parasitic infection in HIV and AIDS infected subjects often present as diarrhea and significant disease has been record in 50-96% of cases worldwide with 90% prevalence rate reported in Africa (2)

Intestinal parasitic infections which are caused either by protozoa or helminthes or both are among the most widespread of human infections worldwide. It is estimated that as much as 60% of the World's population is infected with intestinal parasites which may play a significant role in morbidity due to intestinal infections. The rate of infection is also remarkably high in sub-Saharan Africa, where the majority of people with HIV/AIDS are concentrated where factors including poverty and malnutrition could promote transmission of both infections in the region. (3)

This study will be tried to determine the magnitude of IP among HIV /AIDS patient who are taking ART drug. The study will help to increase the awareness of health professionals about the association of parasitic infection in HIV/AIDS patients who are taking ART.

## 1.2. STATEMENT OF THE PROBLEM

Worldwide HIV/AIDS has created an enormous challenges on survival of mankind, since recognition of virus .It has infected closes to 65 million individuals and killed over 25 million people worldwide. (2)

The etiologic agent (HIV) for AIDS replicates in T. Lymphocytes carrying the CD4 molecules also is the receptor for the virus glycoprotein in attachment. All CD4 cells, types, including peripheral blood macro phages, skin lagerphones cells and brain microvillus cells are susceptible to HIV infection. (4) The definition of AIDS is currently based on the presence of antibody to HIV, a reduction of CD4 T. cell level to less than 500/µ.(4) HIV wasting syndrome (weight loss and diarrhea for more than one month) and occurrence of Kaposi sarcoma, especially *Pneumocyticcarnii* pneumonia. Indication of an HIV can be obtained from analysis of T Lymphocytes (normally CD4: CD8 cell ratio >1.5), which are abnormally low in HIV infected individuals. The stages of AIDS disease is defined by the concentration of CD4 Lymphocytes. (5)

HIV sero-positive patients with CD4 T-cell count < 200 cells/μl had reported an excess risk of diarrhea compared with those having less 500 cells/μl and majority of the opportunistic infections are not observed until CD4 count falls below 200cells/μl. Immune status of HIV infected patients improves with antiretroviral therapy (ART), they become less prone to intestinal parasitic infections and infectious etiologies of diarrhea are parallel to that of immune-competent patients. Patterns of enteric parasites causing chronic diarrhea in developing countries like India show contrasting prevalence rates with marked geographical variation. Only a limited data regarding enteric parasites causing chronic diarrhea and their association with CD4 T-cell count and ART is available from our region. Against this background an attempt was made to identify enteric parasites in HIV positive patients presenting with chronic diarrhea and to their association with CD4 counts and ART. (6)

Intestinal parasitic infections play an important role in the progression of HIV infection, by further disturbing the immune system while it is already engaged in the fight against HIV. The gastrointestinal pathology associated with HIV infection comprises significant enteropathy with increased levels of inflammation and decreased levels of mucosal repair and regeneration HIV infection leads to loss of CD4+T cells, which leaves affected individuals mortally susceptible to opportunistic infections. Many of the opportunistic infections that ultimately plague such individuals involve infectious agents that are normally checked by the mucosal barriers which include*Giardia lamblia, Entamoeba histolytica, Ascaris lumbricoides*, hookworm infection, Schistosoma spp and *Strongyloidesstercoralis* are important cosmopolitan intestinal parasites that are common among children and immunocompromised individual. The pathogenic intestinal parasites such as *E. histolytica* and *Giardia lamblia*, can last for months in patients with AIDS, causing malabsorption of nutrients, gradual debilitation through dehydration, and metabolic abnormalities and are responsible for severe diarrhea episodes (2)

Even if most studies on HIV/AIDS positive and negative individuals carried out to determine prevalence of parasitic infection, this study will be tried to address the magnitude of parasitic infection on patients taking ART at Alem ketema enat hospital.

## 1.3. SIGNIFICANCE OF THE STUDY

As it is indicated in the statement of the problem, the severity and magnitude of IP in HIV/ AIDS patients require attention and study, especially in the countries like Ethiopia and other developing countries where there is high HIV/AIDS and parasite prevalence.

Chronic immune activation by parasitic infection could be one of the several causes of T. cell depletion in HIV infection and could considerably contribute to the progression of HIV disease. Therefore studies in such problems are highly significant.

So this study will tried to provide a base line data on the prevalence of IP in HIV/AIDS infected patients who are taking ART. It also provides a clue or other researchers to more on the effect of ART on IP infection of the patent.

# CHAPTER TWO

## 2. LITERATURE REVIEW

Several species of protozoa have been associated with acute and chronic diarrhea in HIV disease. This includes: *C. parvum, I. belli*, *microsporodia* species, *G. lamblia,* Histolytic/ *dispar,* *cyclospora* species, *Blastocysts hominies* and *Dientamoebafragilis,* but convincing evidence is lacking as to the causality of last two protozoa. Beside this *S. stercoralis* can cause diarrhea and hyper infection in patients with variety of immunosuppressive disorder including HIV/AIDS. (9)

In a study carried in Thailand the prevalence of IP among the HIV infected patients was about 50%, *H. worm*, *A. lumbricoides* appeared to have the highest prevalence (13.33%) and (10.33%) followed by *Opisthorchis viverrini* (10%), *I. belli* (5%), *S. stercoralis* (3.33%, *C. parvum* (3.33%) and Microsporidium (1.67%). The prevalence of IP was significantly higher in patients with diarrhea. (10)

Similar study conducted in HIV infected adults in Cameroon, IP were found 33%. Helminthes were identified in 12.3% of patients, of whom 26.3% had *S. stercoralis* Larvae. Non-opportunistic protozoa mainly non- pathogenic amoeba were identified in 18% of patients. 4.5% of patients had *E. histolytica /despar* and 29% patients had diarrhea. Opportunistic protozoa were found in 3.9% of patient, half of them had diarrhea and 1. 9% patients had *I. belli*. (11)

The study conducted in Dessie hospital ART clinic, the overall prevalence of IP in pre-ART and on-ART was 39% and 17.6%, respectively with significant decrease of intestinal parasite in the ART era (p < 0.001). All Cryptosporidium spps infections were found in the pre-ART patients and significantly associated for lower CD4 <200cells/mm3. Absence of toilet (AOR = 7.57; 95% CI = 1.3,44.22), source of water (AOR = 6.03; 95% CI = 1.14,31.98), living condition (AOR = 13.29, 95% CI = 5.14, 34.35); WHO stage (AOR = 6.06; 95% CI = 2.49,14.74) and ART status (AOR = 7.55; 95% CI = 3.24,17.59) have significant association with prevalence of intestinal parasite. (8)

A study conducted in Adama, Afar and Dire Dawa, only two (1.5%) were diagnosed with an opportunistic parasite, and 96 (48%) of the non-ART study participants were infected with at least one other intestinal parasite species. The prevalence was 16% for *Giardia lamblia*, 13% for *Entamoebahistolytica/ E. dispar*, 8% for *Cryptosporidium*spp, 5% for *Isospora belli*, 1.5% for *Blastocystishominis*, 2.5% for *Ascaris lumbricoides*and 2% for *Hymnolepis nana*. Diarrhoea was significantly associated with cryptosporidiosis, giardiasis, and isosporiasis. Significant association was observed between lower CD4+ T cell count (<200 cells/μL) and the prevalence of Cryptosporidium spp, *Isospora belli,* and *Blastocystishominis*. The three parasites were significantly prevalent in HIVsero-positive patients not on ART. (12)

The study conducted in Dilla referral hospital indicated the most prevalent parasitic at 2012 year among both sex were malaria 18.75% and 25.00% males and females respectively. The three intestinal parasitic were shown on ART patients during 2012 year A.umbricoids, H.nana, &T.saginata at percentage (18.75%) (13)

Study undertaken in Hawassa referral hospital shwed the prevalence of any intestinal parasitic infection was significantly higher among HIV positive participants. Specifically rate of infection with Cryptosporidium, *I.belli*, and *S.stercoralis* less than 200 cell, Diarrhea was more frequently also at the same lower CD4Tcell counts. (14)

In similar study conducted in Jimma hospital indicated the parasites detected were A. lumricoides (30.8%), blastocyst is species (14.1%), *E histolytic/dispar* (10.3%). *T. Trichuiria* (6.4%), *S. stercoralis* (5.1%), *G. lamblia* (3.8%) and multiple infections were common among HIV /AIDS infected patients. (15)

In another study conducted at Jimma specialized Hospital in which stool specimens from HIV/AIDS infected and HIV negative individuals was examined. Out of 78 HIV/AIDS patients 52.6 (41/78) and of 26-HIV negative individuals 42.6% (11/26), were infected with one or more parasites. Multiple infection were common among HIV/AIDS patients *Blastocystisis* species were found to be significantly higher in HIV/ AIDS patients. (16)

Another study conducted on Hawasa teaching and referral hospital in 2009 a total of 378 were screened for intestinal parasites during the study period majority of the participant were urban dwellers (80.7%) and female (51.4%) thirty five subjects (9.3%) were less than 20 years old ,288(76.2%) were in the age 20-40 years and 55 (208/378) of the study subject were positive for at least one intestinal parasite .The most frequently detected parasites were E .*histolytical* (3.2% ) T .*trichuris* (7.4%),G. *lamblia* (41%) and *strongloidstercolaris* (3.4%) .The prevalence of oocysts of *cryptosporidium* was 25 % in AIDS patients with chronic diarrhea. Among the opportunistic parasite frequently associated with AIDS in 1.9 % I *belli* and 50.3 % of AIDS patients with chronic diarrhea.(17,18)

# CHAPTER THREE

# 3 OBJECTIVES

## 3.1 General objective

To determine the prevalence of intestinal parasite and its predisposing factors among HIV /AIDS infected patients who are taking ART at Alem ketema eenat Hospital.

## 3.2. Specific objective

1. To describe the socio-demography of the study population
2. To determine the prevalence of Intestinal parasite
3. To identify the association between intestinal parasite and risk factors

# Chapter Four

# 4. Method and Materials

## 4.1 Study Area

The study was conducted at Alem ketema enat Hospital which is found in Merhabete woredas in the Amhara Region of Ethiopia. Part of the Semien Shewa Zone, Merhabiete is bordered on the south by Ensaro, on the west by the Oromia Region, on the north by MidaWoremo, on the east by Menz Keya Gebreal, and on the southeast by MoretnaJiru. The administrative center is AlemKetema.

Based on the 2007 national census conducted by the Central Statistical Agency of Ethiopia (CSA), this woreda has a total population of 126,501, an increase of 27.87% over the 1994 census, of whom 63,997 are men and 62,504 women; 13,113 or 10.37% are urban inhabitants. With an area of 1,058.19 square kilometers, Merhabiete has a population density of 119.54, which is greater than the Zone average of 115.3 persons per square kilometer. A total of 29,916 households were counted in this woreda, resulting in an average of 4.23 persons to a household, and 29,075 housing units. The majority of the inhabitants practiced Ethiopian Orthodox Christianity, with 99.63% reporting that as their religion. The climatic condition of this woreda is woynadega and the majority of their annual income, depend on agriculture. Alem ketema enat hospital is found 183 km far from Addis Ababa.

## 4.2 Study design and study period

A cross sectional study was conducted to determine the prevalence of intestinal parasite among patients who was requested stool laboratory investigation for intestinal parasite during the period from April 1-15, 2016.

## 4.3 populations

### **4**.3.1. Source of population

All HIV/AIDS positive patient who was diagnosed at Alem ketema enat hospital

### **4.3.2 Studypopulation**

HIV/AIDS infected patient who are taking ART at Alem ketema enat hospital.

## 

## 4.4 Sample size and sampling techniques

### **4.4.1 Sample size**

Sample size mainly depends on the number of HIV infected patients who comes for ART within the study period sample size is calculated by the formula.

n= (Zα/2)2 p(1-p)

d2

Where

n=sample size

Za/2=the standard normal deviation corresponding to specific confidence level (95%), 1.96

p=prevalence of IP 78%

d=degree of accuracy desired (0.05)

n= (1.96)2 (0.78) (1-0.78) =

(0.05)2

n=364, N= 300

= 164

## 4.5 Study variables

### **4.5.1 Dependent variable**

The prevalence of Intestinal Parasitic infection taking ART drug

Presence or absence of diarrhea

### ***4.5.2 Independent variables***

- Age - Literacy status

- Sex - habit of eating raw meat

- Latrine usage - Habit of trimming of finger nail

- Use of shoes

- Personal hygiene

## 4.6. Materials

For this study disposable glove, specimen container, pasture pipette, pen, pencil, microscope, microscopic slide, cover slide, duplicating, normal physiological saline (0.85%) specimen container, waste disposal, applicator stick and disinfectant was used.

## 4.7. Data collection

Before the actual data collection is carried out pre-test was done to evaluate the validity and reliability of the formats and procedures of the study. Data collection was carried out by using structural questionnaires containing socio-demographic characteristics and other variables. Detailed information was collected by interviewing of suspected patients. Leak proof wide mouth specimen container was given to patient with applicator stick. Brief explanation was given to patient about type and amount of specimen. Labeling specimen with patient code number.

The specimen was examined microscopically and macroscopically after sample collection. Stool of patient was mixes with normal saline or lodine (lugol) on the slide, the size of stool is usually match pea size. Cover with cover slide. Examine systematical for entire preparation for larvae, ciliates, helminthes, ova, cysts, trophozoites, oocysts and sometimes for adults worm macroscopically. (Appendix 2)

## 4.8 Quality Assurance

* To assure the reliability and validity of the test.

**Pre-analytical phase**

* Good quality and well defined reagent will be used.
* The patient was instructed on how to collect specimen
* The questionnaire was checked and tested before the actual data collection

**Analytical phase**

* SOP was used throughout the study period

To avoid personal errors, a randomly selected slide was examined by professionally skillful laboratory personnel.

**Post–analytical phase**

* The result was checked before giving to the patient
* The result was recorded carefully
* The data was analyzed appropriately.

## 4.10. Data processing and analysis

The data was processed by using SPSS and analyzed by using available scientific calculator, cross tabulation and simple descriptive statistics was used to show the positive rate analysis. Significance of differences was calculated using chi-square test and the result will be interpreted accordingly.

## 4.11. Ethical considerations

Before data collection, written consent was obtained from ethical review board of Jimma University, and this letter was communicated with the hospital administrators. Furthermore the objective of the study was explained to the study participants. Any result was communicated to the health personal for proper medication.

## 4.12. Dissemination of finding

The finding of the study was given to medical laboratory science department and the CBE office to be used as reference it was also give to administration of hospital that are responsible on treatment and intervention of community health which is found around the study area. CHAPTER FIVE: RESULT

# 5.1. Socio-demography of the study subject

A total of 141 subjects were participated in this study, among them, 76(54%) were males and 65(46%) were females. With regard to age 1(0.7%), 8(5.7%), 130(92.2%) and 2(1.4%) study participants were in age group ≤5 years, 6-14 years, 15-64 years and ≥65 years, respectively. About 55(39%), 24(17%), 38(27%) and 24(17%) of the study participants were illiterate, elementary school students, secondary school students and college and above respectively.

## 5.2. Prevalence of Intestinal Parasitic Infection

Among the total of 141 study participant the overall prevalence of IPI in Alem ketema enat hospital were 22.7 %( 32). *A. lumbricoides* 8(25%) and *Tenia* species 8(25%) was the most predominant parasite followed by *G.lambilia* 7(21.875%), *Hook worm* 4(12.5%), *S.stercoralis* 2(6.25%), *E.histolytica* 2(6.25%) and *H.nana* 1*(*3%) is the least prevalent intestinal parasite. Among those infected with intestinal parasite, 16(50%) were illiterate, 7(21.8%) were elementary students, 4(12.5%) were secondary school students and 5(15.7%) were college and above, which indicate illiterate were highly affected by intestinal parasite. With regard to their age 15-64 age group were highly infected with intestinal parasite 28(87.5%) and there is no infection in age group 0-5 and >65.

Figure1: the above figure shows the prevalence of intestinal parasite among HIV infected patient who are taking ART at Alem ketema enat hospital north showa Ethiopia from April 1-15, 2016.The overall prevalence of intestinal parasite in the above figure is 32(22.7%).

Figure2: the distribution of intestinal parasite in sex among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1-15, 2016. The above chart shows from the total of 141study participant 76(54%) are male and 65(46%) are female and from the total of 32 positive individuals 20(62.5%) are male and 12(37.5%) are female. There was no statistically significant association between sex and intestinal parasites (P=0.267, P>0.05)

Table.1: Age verses intestinal parasites distribution among HIV infected patients who are taking ART at Alem ketema enat hospital from April1- 15, 2016.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Age {in year} | Intestinal parasites | | | | | | X2 and P value |
| Positive | | Negative | | Total | | X2=4.379  P=0.223 |
| No | % | No | % | No | % |
| 0-5 | 0 | 0 | 1 | 0 | 0 | 0 |
| 6-14 | 4 | 50 | 4 | 50 | 8 | 5.7 |
| 15-64 | 28 | 21 | 102 | 79 | 133 | 94.3 |
| >65 | 0 | 0 | 2 | 0 | 0 | 0 |
| Total | 32 | 22.7 | 109 | 77.3 | 141 | 100 |

According to the above table relatively higher prevalence of intestinal parasites was observed in the age group 15-64 years28 (87.5%). There were no significant association between age and intestinal parasitic infection (p=0.223, p>0.05)

Table 2:- percentage distribution of latrine availability verses intestinal parasites infection among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1 - 15, 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Latrine availability | Result of stool examination | | | | | | X2 and P value |
| Positive | | Negative | | Total | | X2=0.296  P =0.587 |
| No | % | No | % | No | % |
| Yes | 32 | 22.9 | 108 | 77.3 | 140 | 99.3 |
| No | 0 | 0 | 1 | 100 | 1 | 0.7 |
| Total | 32 | 22.7 | 109 | 77.3 | 141 | 100 |

The above table shows among 141 study participant 140 (99.3%) have latrine and the rest 1(0.7%) have no latrine and among 140 individual those who have latrine 32(22.7) were infected with intestinal parasite. There was statistically no significant association between latrine availability and intestinal parasitic infection (P=0.587, P>0.05)

Table3:- percentage distribution of shoe wearing habit verses intestinal parasites among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1 to 15, 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Habit shoe wearing | Result of stool examination | | | | | | X2 and P value |
| Positive | | Negative No  % | | Total  % |  | X2=5.782  P=0.056 |
| No | % | No | % | No | % |
| Always | 24 | 19.7 | 98 | 80.3 | 122 | 86.5 |
| Some times | 8 | 44.4 | 10 | 55.6 | 18 | 12.8 |
| Not at all | 0 | 0 | 1 | 100 | 1 | 0.7 |
| Total | 32 | 22.7 | 109 | 77.3 | 141 | 100 |

The above tables shows among 141 study participant 122(86.5%) have habit of wearing shoe always while the rest 19(13.5%) have habit of wearing shoe sometimes and There was statistically no significant association between habit if shoe wearing and intestinal parasitic infections (P=0.056, P>0.05).

Table4:- percentage distribution of literacy status verses intestinal parasites among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1 to 15, 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Literacy status |  | | Result of stool examination | | | | X2 and P value |
| Positive | | Negative | | Total | | X2=5.11  P=0.1639 |
| No | % | No | % | No | % |
| Illiterate | 16 | 29 | 39 | 71.4 | 55 | 39 |
| Elementary sch. | 7 | 29.2 | 17 | 70.8 | 24 | 17 |
| Secondary sch. | 4 | 10.5 | 34 | 92.1 | 38 | 27 |
| College | 5 | 20.8 | 19 | 79.2 | 24 | 17 |
| Total | 32 | 21.3 | 111 | 78.7 | 141 | 100 |

The above tables shows among 141 study participant 55(39%) were illiterate, 24(17%) were elementary students, 38(27%) were secondary school students and 24(17%) were college. There was statistically no significant association between literacy status and intestinal parasitic infections (P =0.1639, P>0.05).

Table 5: percentage distribution of habit of hand washing before meal verses intestinal parasites among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1 to 15, 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Habit of hand washing before meal | Result of stool examination | | | | | | X2 and P value |
| Positive | | Negative | | Total | | X2=1.383  P=0.5001 |
| No | % | No | % | No  % |  |
| Always | 26 | 20.3 | 102 | 79.7 | 128 | 91 |
| Some times | 4 | 33.3 | 8 | 66.7 | 12 | 8.5 |
| Not at all | 0 | 0 | 1 | 100 | 1 | 0.7 |
| Total | 30 | 21.3 | 111 | 78.7 | 141 | 100 |

The above tables shows, among 141 study participant 128(91%) are habit of hand washing before meal always, 12(8.5%) are habit of hand washing sometimes, while the rest 1(0.7%) not at all. There was no significance association between habits of hand washing before meal and intestinal parasitic infection (P=0.5001, p>0.05).

Table 6: percentage distribution of habit of hand washing after defication verses intestinal parasites among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1 to 15, 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Habit of hand washing after defecation | Result of stool examination | | | | | | X2 and P value |
| Positive | | Negative | | Total | | X2=10.424  P=0.005 |
| No | % | No | % | No | % |
| Always | 5 | 8.6 | 53 | 91.4 | 58 | 41 |
| Some times | 13 | 35.1 | 24 | 64.9 | 37 | 26 |
| Not at all | 12 | 26.1 | 34 | 73.9 | 46 | 33 |
| Total | 30 | 21.3 | 111 | 78.7 | 141 | 100 |

The above tables shows, among 141 study participant 58(41%) are habit of hand washing after defecation always, 37(26%) are habit of hand washing sometimes, while the rest 46(33%) not at all. In this study there was significant association between habit of hand washing after defecation and intestinal parasitic infection (P=0.005, P<0.05).

Table7: percentage distribution of finger nail status verses intestinal parasites among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1 to 15, 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Finger nail status | Result of stool examination | | | | | | X2 and P value |
| Positive | | Negative | | Total | | X2=10.163  P=0.001 |
| No | % | No | % | No | % |
| Trimmed | 21 | 17.2 | 102 | 82.8 | 123 | 87.3 |
| Untrimmed | 9 | 50 | 9 | 50 | 18 | 12.7 |
| Total | 30 | 21.3 | 111 | 78.7 | 141 | 100 |

The above tables shows among 141 study participant 123(87.3%) were trimmed, while the rest 18(12.7%) were untrimmed. There was statistically significant association between finger nail status and intestinal parasitic infections (P=0.001, P<0.05).

Table8: percentage distribution of eating raw meat verses intestinal parasites among HIV infected patient who are taking ART at Alem ketema enat hospital from April 1 to 15, 2016

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Habit of eating raw meat | Result of stool examination | | | | | | X2 and P value |
| Positive | | Negative | | Total | | X2=0.315  P=0.854 |
| No | % | No | % | No | % |
| Always | 0 | 0 | 1 | 100 | 1 | 0.7 |
| Some times | 17 | 21.8 | 60 | 78.2 | 77 | 54.6 |
| Not at all | 13 | 20.6 | 50 | 79.4 | 63 | 44.7 |
| Total | 30 | 21.3 | 111 | 78.7 | 141 | 100 |

The above tables shows, among 141 study participant 1(0.7%) are habit of eating raw meat always, 77(54.6%) are habit of eating raw meat sometimes, while the rest 63(44.7%) not at. There was statistically no significant association between habit of easing raw meat and intestinal parasitic infection (P=0.854, P>0.05).

**Figure3:** Prevalence of IP among HIV infected patients who are taking ART at alem

ketema enat hospital from April 1-15, 2016

Table.9:- Duration of treatment for ART on sample population at Alemketemaenathospital from April 1-15, 2016.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Duration of ART | Result of stool examination | | | | | |
| Positive | | Negative | | Total | |
| No | % | No | % | No | % |
| 1-6 month | 5 | 25 | 15 | 75 | 20 | 14.2 |
| 7-12 month | 1 | 0.7 | 13 | 92.8 | 14 | 9.9 |
| > year | 26 | 24.3 | 81 | 75.7 | 107 | 75.9 |
| Total | 32 | 22.7 | 109 | 77.3 | 141 | 100 |

The above tables shows among the total of 141 study participant 20(14.2%) are use ART for 1-6 month, 14(9.9%) are use ART for 7-12 month, and 107 (75%) use ART for one year and above.

# 

Table.10: Predisposing factor for intestinal parasites among HIV infected patients who are taking ART at Alem ketema enat hospital from April1- 15, 2016.

|  |  |  |  |
| --- | --- | --- | --- |
| Habit of hand washing  After defecation |  | Positive  number | % |
| Always | 7 | 21.9 |
| Sometimes | 13 | 40.6 |
| Not at all | 12 | 37.5 |
| Total number |  | 32 | 100 |
| Finger nail status | Trimmed | 23 | 71.9 |
| Untrimmed | 9 | 28.1 |
| Total | 32 | 100 |

The above tables shows among 32 positive test 7(21.9%) are habit of hand washing after defecation always, 13(40.6%) are habit of hand washing sometimes, while the rest 12(37.5%) not at all and 23(71.9%) were trimmed, while the rest 9(28.1%) were untrimmed

# CHAPTER SIX: DISCUSSION

In our study, the overall magnitude of intestinal parasites was high when compared with studies conducted in Cameroon (14.64%) (19). The higher proportion of intestinal parasites in our case may be due to the difference in geographical and environmental conditions. In addition, the lower access to water supply and sanitation in Ethiopia may contribute to the high magnitude of intestinal parasites. In contrast, our ﬁnding was lower than studies conducted in Bahir Dar (69%) (20).And another study in Jimma (62.5%), Ethiopia (21).The increased magnitude in Bahir Dar and Jimma studies could be due to the involvement of a higher proportion of rural participants who would have had high exposure to intestinal parasitic infection due to poor sanitation, untreated water supply and close contact to animals compared to our study participants (22).

In France study focused on the prevalence of intestinal parasite had high frequency of protozoan parasite in HIV/AIDS patients and the rate of *G*.*lamblia* and E.*histolytica* were 5.8% and 2% respectively.  When compared to this study the prevalence of *G*.*lamblia* was high which was 21.875% and 6.25% for *E*.*histolytica* (23).

As compared to study done in moundary city of south india, out of 80 HIV/AIDS patients 31{38.7%} were positive for intestinal parasite for overall prevalence of intestinal parasites. This report from Moundary city shows slightly high prevalence than this study which was the overall prevalence of 22.7% and the possible reason may be the environmental change and living standard of the participants (24).

The study conducted in Dilla referral hospital indicated the most prevalent parasitic at 2012 year among HIV infected patient,the three intestinal parasitic were shown on ART patients during 2012 year A.umbricoids, H.nana, &T.saginata at percentage (18.75%). Compered to this study the most prevalence parasite in this study was A.*lumbricoid*and Tenia species at percentage (25%) this indicate high prevalence of intestinal parasite in this study (13).

Another study conducted in Abuja, Nigeria the overall prevalence of intestinal parasite among HIV positive patients was 24.7% and 17.6% in intestinal parasite in HIV negative individuals and E.*histolytica* was the most prevalent 6.7% and A.*lumbricoids* was the second with 4%. In this study A*.lumbricoids* was the most prevalent 25% and E.*histolytica* was the fourth prevalent. The difference may be due to living standard and frequent contact with soil(25).

According to the study conducted on Hawasa teaching and referral hospital in 2009 a total of 378 were screened for intestinal parasites during the study period majority of the participant were female (51.4%), thirty five subjects (9.3%) were less than 20 years old,288(76.2%) were in the age 20-40 years and 55 (208/378) of the study subject were positive for at least one intestinal parasite. But according to this study the majority of the participants are male (54%), four subjects (12.5%) were in the age 6-14 year and twenty eight subject (87.5%) were in the age 15-64 year (18).

Regarding to habit of hand washing after defecation, statistically significant association between habit of hand washing after defecation and intestinal parasite was observed even though 41% of the total study subjects were washing hand after defecation always, 26% were sometimes and 33% were not washing at all. This could be the cause of why the prevalence of intestinal parasite is high compared to that of washing hand after defecation.

Concerning finger nail status 87.3% were trimmed and 12.7% were untrimmed with positive rate of 12% and 50% respectively. This had statically significant association between finger nail status and intestinal parasite. This finger nail status could the cause of why the prevalence of intestinal parasite is high compared to that of trimmed their finger.

Regarding to duration of ART use, the prevalence of intestinal parasite is high among those who use ART with interval of one year and above, which accounts 26(81.3%) of positive results. This

Generally the difference in the overall prevalence as well as the specific parasite species in this study and the study done at different place mentioned above might be due to the difference in climatic conditions, environmental, socio-economic factors and difference in study participation.

# CHAPTER SEVEN

# 7. Conclusion and Recommendation

## 7.1. Conclusion

In this present study, high prevalence of intestinal parasites among HIV infected patient in Alem ketema enat hospital was observed intestinal parasite are common in HIV infected patient in Ethiopia. Moreover, being male was at higher rate of positivity than female. In this study the predominant parasite was *A. lumbricoid (25%) and Tenia* species (25%). The highest frequency of intestinal parasite positivity was among in the age group (15-64) which may result low income affecting the economy of the working class of the population, andilliterate were highly affected than the other and infections were most probably caused by untrimmed finger nail and hand washing after defecation,

**Recommendation**

Based on the above conclusion the following recommendations are forwarded: Attention should be given to strengthen the laboratory services for intestinal parasite investigation and diagnosis in Alem ketema enat Hospital in particular and in the country in general. Health education about intestinal parasite transmissions and prevention should be given and large scale study on the prevalence of intestinal parasite infection using more sensitive methods could maximize and determine the exact prevalence of intestinal parasite infections. Also the respective health bureau and other stake holders should still need to strengthen their effort to control it.

## 7.3. Limitation of the study

* Write limitation pertaining to the methodology (study design, lab protocol and so on)

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# Annex-1

Questionnaire

Questionnaires format prepared to identify risk factor related to intestinal plastic infection identification and which should be market by ”X” with the appropriate response response.

Patients’ name

Age Sex

1. Latrine availability Yes No
2. Shoe wearing habit Always sometimes Not at all
3. Literacy statues Elementary

Illiterate

Elementary school

Secondary school

Collage

Personal hygiene

1. Hand washing be for meal, always some times

Not at all

1. Hand washing after defecation

Always sometimes not at all

1. Finger nail status, trimmed untrimmed
2. Habit of eating raw meat

Always sometimes not at all

# Annex-2

**Procedures**

Specimen collection

1. Leak proof wide mouth specimen container will be given to patient with applicator stick.
2. Brief explanation will be given to patient about type and amount of specimen.
3. Labeling specimen with patient code No.
4. The specimen will be examined microscopically and macroscopically after sample collection.
5. Stool of patient well be mixes with normal saline or lodine (lugol) on the slide, the size of stool is usually match head size.
6. Cover with cover slide.
7. Examine systematical for entire preparation for larvae, ciliates, helminthes, ova, cysts, trophozoites, oocysts and sometimes for adults worm macroscopically.
8. Use 10x Objectives with the condenser iris diagram is closed sufficiently.
9. Always exam several microscopic fields before report says

“No O/P is seen”.

# Annex- 3

**Laboratory request format for stool examination**

Age \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sex \_\_\_\_\_\_\_\_\_\_\_\_\_\_ code No.\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Macroscopic examination

1.1. Presence of adult worms \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1.2. Consistency of stool

1. Formed Loosen Diarrhea Dysentery
2. Other specify\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1.3. Color

1. Brown Choky white
2. Other specify\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Direct wet mount for microscopic examination

2.1. Parasite positive for

1. *A. lumbricoids*
2. *G. lamblia*
3. Tenia species
4. *T. trichuria*
5. *S. stercoralis*
6. *E. histolytica/dispar*for cyst or Trophozoite
7. Others (specify)

2.2. No ova of parasite seen\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Sign (P.I) and Date