**Addis Ababa University, College of Health Sciences, School of Public Health**

# Ethiopian Field Epidemiology Training Program (EFETP)

**Complied body of works**

**By**

**Meklit Mekonnen**

**Submitted to the School of Graduate Studies of Addis Ababa University in partial fulfillment for the degree of Master of Public Health in Field Epidemiology**

**May 2016**
**Addis Ababa**

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**Advisors**
**Pro Alemayehu Worku**
**Mss. Mastewal Worku**

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# ADDIS ABABA UNIVERSITY

## School of Graduate Studies

**Compiled Body of Works in Field Epidemiology**

**By**

**Meklit Mekonnen**

**Ethiopian Field Epidemiology and Laboratory Training Program (EFELTP)**

**School of Public Health, College of Health Sciences**

**Addis Ababa University**

**Approval by Examining Board**

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## Complied Body Works

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## Complied Body Works

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## List of Abbreviations and Definition terms

| | |
|---|---|
| AIDS | Acquired immune-Deficiency Syndrome |
| ANC | Antenatal care |
| ANRHB | Amhara National Regional Health Bureau |
| AOR | Adjusted odd ratio |
| AR | Attack rate |
| ART | Anti-Retroviral Therapy |
| ARV | Anti-retroviral Drug |
| BBL | Benzyl Benzoate Lotion |
| BCG | Bacillus Chalmette Gu"erin |
| CAR | Contraceptive acceptance rate |
| CBN | Community Base Nutrition |
| CDR | Case detection Rate |
| CFR | Case Fatality Rate |
| CI | Confidence interval |
| DMS | Data Base Management |
| DOR | Dropout rate |
| EFETP | Ethiopian Field Epidemiology Training Program |
| EFY | Ethiopian Fiscal Year |
| EHN | Ethiopian Health Nutrition |
| EPA | Ethiopian Protection Agency |
| EPHA | Ethiopian Public Health Association |
| EPHI | Ethiopian Public Health Institution |
| EPI | Expanded Programme of Immunizations |
| EPRP | Epidemic Preparedness and Response Plan |
| FMOH | Federal Minster of Health |
| GIS | Global Information System |
| FP | Family planning |
| HDA | Health Development Army |
| HC | Health Center |
| HEW | Health Extension Worker |

## Complied Body Works

| | |
|---|---|
| HIV | Human immune deficiency virus |
| HMIS | Health management information system |
| HSDP | Health Service Development Program |
| IgM | Immunoglobulin M |
| IRS | Indoor Residual Spray |
| LLINS | Long lasting Insecticide Nets |
| MCH | Maternal Child Health |
| MUAC | Mid upper Arm Circumference |
| NGOs | Non-Governmental Organizations |
| ODF | Open Defection Free |
| OR | Odd ratio |
| OTP | Out-patient Therapeutic Programme (treatment of SAM at home) |
| OPD | Out Patient Department |
| OPV | Oral Polio Vaccine |
| PHEM | Public Health Emergency Management |
| PHEMC | Public Health Emergency Management Committee |
| PIHTC | Provider Initiative HIV testing and Counseling |
| PMTCT | Prevention of Mother to Child Transmission |
| PNC | Post-natal care |
| RDT | Rapid Diagnostic Test |
| RNA | Rapid Nutritional Assessment |
| SAM | Severe Acute Malnutrition |
| SPSS | Statistical package social sciences |
| TB | Tuberculosis |
| TFP | Therapeutic Food Program |
| TSF | Targeted Supplementary Food |
| TFU | Therapeutic feeding unit (in Hospital, health center or other facility) |
| TOR | Term of Reference |
| TVET | Technical Vocational Education Training |
| WHO | World Health Organization |

## Complied Body Works

# Executive Summary

Ethiopian Field Epidemiology Training Program that adapted from the United States Centers for Disease Control and Prevention (CDC) Epidemic Intelligence Service (EIS) is one of the programs focusing on capacity building public health practitioners. Ethiopian adopted the Field Epidemiology Training program in 2009 to help improve leadership within public Health Emergency Management. The EFETP provides residents a Master of public Health degree in Field Epidemiology after they complete two years of supervised work in applied or field epidemiology.

The EFETP program has two main components, each of which contributes to the prize of Master degree; classroom-teaching component consist 25% and practical attachment or field placement component (75%), residents spending 75% of their time in the field, consisting of disease investigations, surveillance data analysis, surveillance evaluations and research on national health problems. Residents have the opportunity for public health practice in the real world.

This document is compiled body of work accomplished during the two years stay in the field epidemiology and laboratory training program in Addis Ababa University School of Public Health Field Epidemiology Training Program and at Amhara Regional Health Bureau Field Base. During my stay, I carried out two outbreak investigations, one surveillance data analysis, one surveillance system evaluation, one district health profile description, submission of two abstracts, one scientific manuscript for peer reviewed journals, one Meher assessment, one epidemiological research proposal, training .

My first dysentery outbreak investigation was conducted in Dera Woreda, South Gonder Zone and second scabies outbreak investigation was conducted in Enarji Enawuga Woreda, East Gojjam zone. Descriptive and analytical epidemiology (unmatched case control studies) methods were used to describe magnitude of the diseases and identify risk factors associated with diseases. A total of 86 dysentery cases were reported from which 53 dysentery cases and 108 controls were enrolled in the study. I identified that common source of the epidemic was contamination of water; drinking untreated water; not practicing hand washing and no access latrine were contributed for malaria outbreak in the woreda. I recommended first treat contaminate water then stakeholders at all level should work on allover diarrheal diseases prevention and control activities such as the regional health offices, zonal health offices, woreda health offices in addition regional sanitation and water offices should conduct monitoring of

hygiene and availability of safe water for the local community and access to latrine. Additionally, there was Scabies outbreak investigation. During this outbreak, a total of 56,122 scabies cases and no deaths were reported. Certain environmental conditions such as overcrowding, poor personal hygiene, poverty, and lack of knowledge, which are favorable to the spread of scabies .We recommended, reducing overcrowding, and by improving health education, personal hygiene, treatment and surveillance among high-risk population sand lastly implement massive treatment campaign.

Surveillance data analysis of magnitude of HIV infection for consecutive Five years (2010 – 2014) was conducted in Felege Hiwot Referral Hospital ART center, Bahir Dar, Amhara region, Ethiopian. HIV cases have decreased from year to years. Even if incidence rate of HIV was decreases the burden of HIV still increases. TB-HIV co infection is critical problem which need give attention in screening program; After starting of ART in the first 6 month of treatment strict follow up and registered ever follow up stage ; identify either they are improve or not.The reporting format should including important variable like Opportunistic infection. As we know nutritional intervention is the integrated part of HIV/AIDS management so we must registered and record properly patient weight and height to calculate BMI and follow up stage.

I conducted surveillance system evaluation in East Gojjam zone of Amhara region in 2016. During this evaluation, surveillance of selected diseases (malaria and Sever acute malnutrition) was assessed. Poor data management, infrequent supportive supervision, absence of well-organized feedback, poor utilization of manuals and guidelines were contributed for unsatisfactory of the system at the zone, District and, health facilities level.

Health profile description was carried in Gonji Kolela district, West Gojjam Zone, Amhara region, 2015

I prepared scientific manuscript for peer reviewed journals on Scabies outbreak investigation and response in Enarji Enawuga woreda, East Gojjam zone, Amhara region. Two abstracts were done for scientific conference submission; Scabies Investigation and Surveillance data analysis on magnitude of HIV infection for consecutive Five years (2010 – 2014) was conducted in Felege Hiwot Referral Hospital ART center, Bahir Dar, Amhara region. Meher assessment was conducted in selected woredas of East Gojjam and South Shewa zones in Amhara region during 2015 to identify humanitarian needs following emergency occurrence. Malnutrition is anticipated to be a major public health concern in two zones because of EI-Nino. There were scabies and

severe acute malnutrition outbreaks in some districts of two zones. I identified shortage of drugs and medical equipment at both zonal level and many districts of these zones.

Epidemiological research project proposal on prevalence of opportunistic infections and associated factors in HIV-positive patients on antiretroviral therapy in Felege Hiwot Referral Hospital, Bahir dar, Amhara region, Ethiopian was prepared. Descriptive cross-sectional study will be used for this study.

Training was given to zonal and woreda PHEM focal persons from four zones and towns of region on PHEM overview, Early warning system, Public health emergency preparedness, Response, Recovery, Epidemiology and case-management of selected diseases. The training was success full in participation rate and increasing knowledge of participants as identified by post - test. The trainings were organized by the Amhara regional health bureau, public health emergency core process.

# Chapter I – Outbreak/Epidemic Investigations

## 1.1 Dysentery Outbreak investigations in Dera Woreda, South Gonder, Amhara Region, 2015


**Abstract**

**Background:** Shigellosis is the most common cause of outbreak of bloody diarrhea worldwide with secondary infection rates as high as 40% in the household and case fatality rate of 15-20%.

**Method:** Unmatched 1:2 case-control study was conducted from July 2- 10, 2015. Data were collected using Semi- structured questionnaire. Stool and drinking water sample were also collected, transported and examined as per standard Microbiologic procedures. Data were entered and analyzed in Epiinfo 7 and SPSS, ARC GIS. To measure the significance of association we constructed odds ratio, 95% CI.

**Results:** A total of 86 dysentery cases with no death were identified. The median age of case and control were 25 (Range, 2- 62 years). The overall attack rate (AR) was 2.3 per 1000 (86) population. Highest attack rate was observed among 15- 44 years (2.6 per 1000), highest cases were registered from Arib Gebeya Kebele 4.4 per 1000 population .In multivariate analysis the statically significant variables are no access to latrine AOR=7.2 (95% CI: 1.8 – 29.4), washing hands without soap AOR 5.1=(95%CI: 2.4 -11.1),not washing of hands after using toilet AOR=5.6 (95%CI: 2.5– 12.1), open filled dispose of household garbage AOR 9.2=(95%CI: 3.7 – 22), were risk factors for dysentery diseases but treating water with chemical /boil AOR=0.16 (95%CI :0.06 – 0.39) were protective factors.50%.Stool samples collected for microbiological culture were positives for shigella dysentery and water specimens collected from spring and pipeline was positive for coliform count at $37^0$c/48 hrs /100ml was >180,Eshenerichia Coil Type 1 present and commented as Bacteriologically the water is not potable and chlorination necessary.

**Conclusion:** There was an outbreak of dysentery in Dera woreda due to shigella dysentery, the most likely common source of the epidemic was contamination of water. Therefore, provision of safe drinking water supply and raising community awareness about hygienic practices to control diarrheal disease is necessary.


**Key words:** Dysentery, Shigellosis, Dera, Ethiopia

## Complied Body Works

### Background

Dysentery, defined as diarrhea with visible blood, can be caused by many different organisms, including shigella spp, enterohemorrhagic, Escherichia Coli serotype O157:H7, Campylobacter jejuni, enteroinvasive E.coli, Salmonella spp and infrequently, Entamoeba histolytica.Of these organisms , the only ones known to cause large epidemics are shigella dysenteriae serotype 1 (sd1), and much less frequently , E.coli O157:H7(1).Dysentery is an infectious gastrointestinal disorder, characterized by inflammation of the intestines, mainly the colon. WHO defines dysentery as any episode of diarrhea in which there is blood in loose and watery stool (2).The main dysentery signs and symptoms are pain in the lower abdominal region is the most common of the dysentery symptoms. The pain is usually intense often associated with cramping. Patients of dysentery pass stool mixed with blood. Such stools are known as Melana or bloody stool and also have diarrhea or looseness of the bowels. People with dysentery are also seen to suffer from high body temperatures. Dysentery and fever is quite common in suffers, particularly in children (3).Dysentery can mainly spread among people through contaminated food and water as well as poor sanitation (2).

Bloody diarrhea is wide spread globally and occurs in outbreaks. Shigella is the most common cause of outbreak of bloody diarrhea worldwide affecting up to 30% of the population and case fatality rate is up to 50 %( 4) . During the past decade, the number of countries reporting dysentery to WHO has increased from three in 2003 to 23 in 2007.The most common isolate confirmed was shigella dysenteriae type 1, resistant to contrimoxazole (5).Worldwide, the incidence of shigellosis is estimated to be 164.7 million cases per year, of which 163.2 million were in developing countries, where 1.1 million deaths occurred. About 60% of all episodes and 61% of all deaths attributable to shigellosis involved children younger than 5 years. The incidence in developing countries may be 20 times greater than that in developed countries. Although the relative importance of various serotypes is not known, an estimated 30% of these infections are caused by S dysenteriae (6). Shigellosis is the most common cause of outbreak of bloody diarrhea worldwide with secondary infection rates as high as 40% in the household and case fatality rate of 15-20%. Outbreaks may result in large scale mortality as occurred in an outbreak of Shigella dysenteriae type 1(Sd1) which caused very high fatality of 20,000 in one month among Rwandan refugees in Zaire in 1994. Shigella has very low infectious dose;

ingestion of as few as 10- 200 viable bacteria resulting in clinical disease after an incubation period of 12-96 hours (7).

In the past two decades major outbreaks have occurred in Africa, South Asia and Central America. Between 1993 and 1995, outbreaks were reported in several central and southern African countries. In 1994, an explosive outbreak among Rwandan refugees in Zaïre caused approximately 20,000 deaths during the first month alone. Between 1999 and 2003, outbreaks were reported in Sierra Leone, Liberia, Guinea, Senegal, Angola, the Central African Republic and the Democratic Republic of Congo (7). The largest outbreak of dysentery caused by Shigella dysenteriae type I (SD l) in Western Africa was reported in 1999, by Medicines Sans Frontiers (MSF) in the Kenema district in the southeastern part of Sierra Leone. The total number of cases was 4,218, with an overall attack rate and case fatality rate (CFR) of 7·5% and 3.1% respectively. The attack rate (11·2% vs. 6·8% relative risk= 1·6; 95% CI 1·5-1·8) and CFR (6·1% vs. 2·1%; relative risk=2·9; 95% Cl 2·1-4·1) was higher among children under the age of 5 years compared to the rest of the population). During the same period, several outbreaks were reported to WHO from 54 countries in western Africa: 922 cases/21 deaths from Guinea, 509 cases/0 deaths from Liberia and 705 cases/l 0 deaths from Burkina Faso. During the past decade, the number of countries reporting dysentery to WHO/ AFRO has increased from 3 in 2003 to 23 in 2007. The most common isolate confirmed was Shigella dysenteriae type I, resistant to contrimoxazole (8).

Diarrheal disease among young children remains one of the most important contributors to morbidity in Ethiopia and is the second leading cause of death in children under five years of age (9). At present, there are approximately 485,000 deaths per year among Ethiopian children less than five years of age. Assuming 20% of these deaths are due to diarrheal diseases, these total 97,000 deaths annually (10). In a verbal autopsy study undertaken in 1995 within three rural districts of northwest Ethiopia, diarrhea accounted for 31% of the mortality among children less than five years of age. Dysentery was the most probable cause in 14%, persistent diarrhea in 9%, and acute watery diarrhea in 8% of the deaths (11). In the past decades major outbreak has occurred in Ethiopian. . On 12$^{th}$ December 2008 G.C, several cases of bloody diarrhea visited Jimma University Specialized Hospital (JUSH) and private clinics in the city. A total of 566 cases were seen in different health facilities in Jimma City in a period 29 days (12). Between 2006 and 2008, there have been various reports of diarrhea with blood in Ethiopia and also

reports of Shigelloses outbreaks in some parts of the country. In March 2010, Addis Ababa University (AAU) Technology Campus reported occurrence of an outbreak of diarrheal illness among students. A total of 104 suspected cases were identified, based on the case definition, with an attack rate of 6.8%. Stool culture confirmed Shigella flexneri species in 5/11 (45%) of specimens tested. Risk factors associated with illness included eating specific foods at specific meal times (13).I n 2005/06, there was a report of a bloody diarrhea outbreak in Southern Nations Nationalities Peoples Region (SNNPR) with a total of 209cases and 1 death (14)

Outbreak investigation conducted in Dera Woreda, North Gonder zone, particularly in Areb Gebeya Kebele and Ambesamin Kebele where majority of the cases reported. Following the notification, the Regional PHEM decided to investigate the suspected bloody diarrhea. A team composed of PHEM staff, EFETP residents and regional laboratory staff, deployed to the area to investigate the reported dysentery cases. The objectives of undertaking the investigation were confirming presence of an outbreak, identify the causative organism, identify source of the epidemic, assess the extent of the outbreak in terms of the population affected and geographic spread, identify contributing factors for the spread of the epidemic and design control and preventive strategy.

**Objectives**

**General objective**

To investigate the outbreak epidemiologically, identify source of the epidemic and provide appropriate control & prevention measures of the disease.

**Specific objectives**

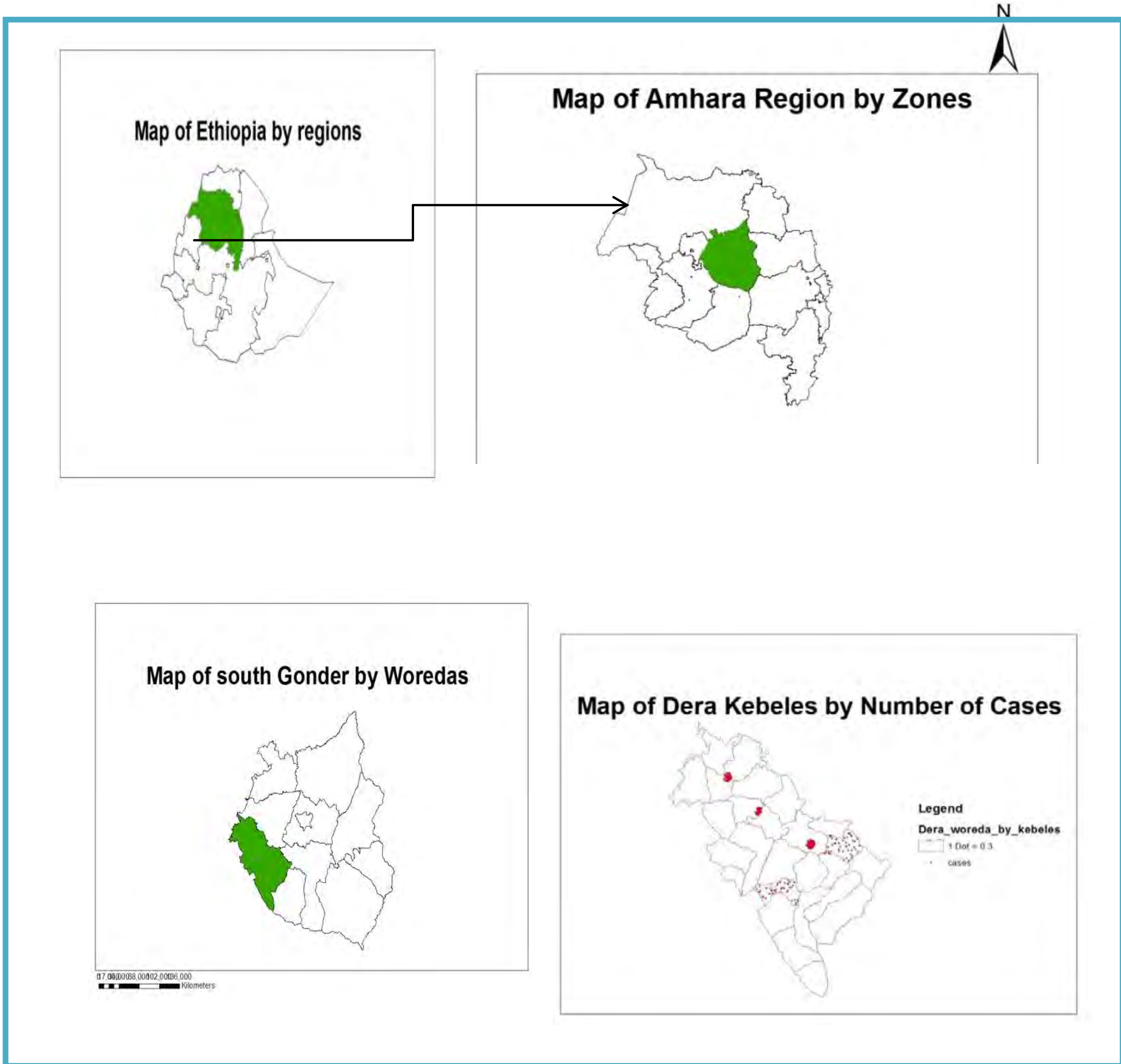
- To confirm the presence of outbreak
- To identify the causative agent
- To describe the outbreak by time, place and person
- To identify source of the epidemic and analyze risk factors
- To determine the magnitude of the outbreak
- Design control and preventive strategy.

## Materials and Methods

### Study area and population

Dera woreda is one of the woreda in South Gonder zone, Amhara region Ethiopia. It is located at a distance of 119 kms from the regional town (Bahir dar) and 494 kms from Addis Ababa. The woreda shares boundaries with Fogera woreda to the North, Mirab Este to the east, on the northeast by Misraq Este, on the south by the Abay River which separates it from the Mirab Gojjam Zone, on the west by Lake Tana. Towns in Dera include Amba Same, Arb Gebeya, Hamusit, and Qorata. The catchment area of the woreda is 1,525.24 square kilometer. The woreda has total population of 278,697 over half 50.3% were females and 37,736 (13.54%) under five years, 9392were pregnant in addition to this, Urban population 23,155 (30.8%) and rural population 255,543(69.2%).Dera woreda had total of 4984 household in 2015, of these 3998 (80%) have latrine (No of house hold with latrine) and 3559 (71%) of household were using latrine (latrine utilization coverage). On the other hand safe water supply coverage in the district was 81%, when we see respectively in rural community 79% coverage and in urban community 20% coverage. The district water resources office is working to supply safe drinking water for the society but there were part of society, which uses unsafe water for drink like from river, spring, wells, etc. The ethnic composition of the woreda was 99.4% Amhara and Amharic was spoken as a first language by 99.4%. The religious composition more than 97.42% was followers of Ethiopian orthodox Christianity and the remaining 2.48% of the population said they were Muslim.

## Complied Body Works




**Map 1:** Map of Dera woreda, South Gonder zone, Amhara Region, Ethiopia 2015

**Study period:** The study was conducted from July 2-10, 2015

**Study Design:** Unmatched case –control study was conducted.

**Target population:** All population in Dera Woreda, Areb Gebeya Kebele and Sheme Mariyam where cases and controls recruited

**Study population:** All cases and populations from who controls were recruited

**Sample Size:** Simple random sampling method was employed to recruit cases and controls. Sample size was calculated using Epi-info 7 stat calc for unmatched case-control study

Two sided confidence level (1-α) =95%

Power (% chance of detecting) = 80%

Ratio of controls to case= 1: 2

Proportion of controls with exposure = 22.3 %( 17)

Least extreme odds ratio to be detected = 2.89 (13)

Proportion of case with exposure = 45.3 % (based on Epi –info Cal)

Therefore, the sample size was calculated using Epi info stat calc, 162 samples 54cases and 108 controls were selected.

**Standard case definitions**

**Suspected case:** A person with diarrhea with visible blood in stool

**Confirmed case:** suspected case with stool culture positive for Shigella dysenteriae type 1

**Data collection method**

The study was conducted by house-to-house search for Dysentery case. We used semi-structured questionnaires and interviewed cases and controls, and selected cases were those confirmed at health centers; whereas controls were selected from kebeles where cases were selected. Controls were recruited among neighbors or family member of cases who did not report clinical symptoms consistent with dysentery in the previous 2 weeks. Data was collected by principal investigator and co-investigator including woreda PHEM officer, heath center workers and sample were taken by laboratory technician.

**Laboratory Investigation**

Four stool samples from four cases were collected and transported to Amhara regional Research Institute Microbiology Laboratory keeping in cold chain. Stool specimen was collected using sterile cup and transported to Bahir dar regional health research laboratory center. Microscopic examinations, culture and sensitivity tests were done on collected samples.

For isolation of Shigella species, stool samples were inoculated into the MacConkey agar and the characteristic colonies were identified by standard biochemical methods-Inoculation of Kligler iron agar [KIA] (15). Water samples were collected for bacteriological analysis using standard water sampling procedure. Samples were taken from 3 sites of Meha Kebeles (chircherit spring), Sheme Mariyam Kebele, sengat Village and Ambesamin Kebele. Water quality assessment was also complemented with sanitary inspections of the treatment plant. The analysis was done in Amhara regional Research Institute using standard technique to identify indicator organism and see its compliance with the national and WHO standards (16).

**Environmental Investigation**

A team of investigators inspected the hygiene and sanitation of the community, their water supply, season (climate change). Water samples from the pipe and spring were collected for laboratory testing.

**Data quality control**

Secondary data was compiled from Weekly PHEM report. Data was collected by four people (principle investigator, two co-investigator and laboratory technical). The collected data was verified daily during the investigation period and in addition to this when entering the data in to the computer the missing variables and consistency of filling of questionnaires and completeness of data was checked out carefully.

**Data entry and Analysis**

Data was checked, entered and analyzed on computer using Epi info 7, MS- Excel and Arc GIS were used. Descriptive and analytical statically analyses were under taken. Logistic regression analysis was conducted to find association of illness with risk factors and exposure outcome were measured and tested using OR, 95% Confidence Interval. Results were presented using graphs, tables, charts.

**Ethical issue**

Support letter was written from regional health bureau and Zonal health office. We obtained support and willingness to conduct the study from woreda health office. Objective of the investigation was told to study participants briefly. Then after, their oral consent and support was asked to participate in this study. Their confidentiality was assured and study participants positive for shigellosis were linked to health centers.

**Results**

**Descriptive Epidemiology**

According to our investigation a total of 89 cases with no death of bloody diarrhea were identified from 15/6/2015 – 21/6/2015 within one week. Cases were those present themselves to health center. The number of case was increased from week to week. This is higher than the usual number of cases evidencing an outbreak. According to national guideline the dysentery outbreak threshold is unusually increasing in number of cases or doubling of cases on subsequent weeks and suspected case confirmed with stool culture positive for shigella dysentery. It showed that the current case trend line crossed the threshold levels (see figure 1).

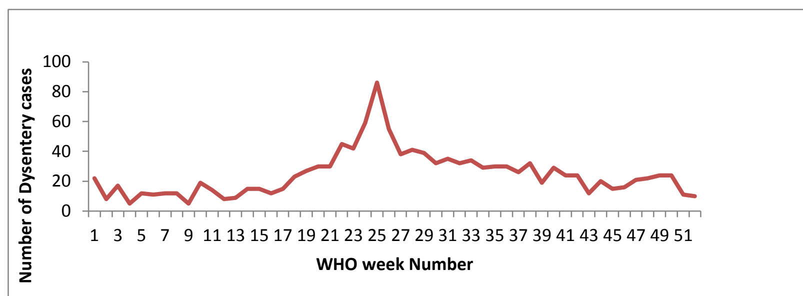



**Figure 1:** Epidemic weeks in 2015 from Dera woreda health office, South Gonder zone, Amhara region, Ethiopian 2015.

The overall attack rate (AR) was 2.3 per 1000 (86) population (total population of Dera woreda. Highest attack rate was observed among 15- 45 years (2.6 per 1000) and 1.4 per 1000 < 5 years old children were the lowest attack rate. From 86 dysentery cases 54 (62.7%) males and 32 (37.2%) females, median age of cases were 25 (Range, 2- 62 years). See figure 2 below

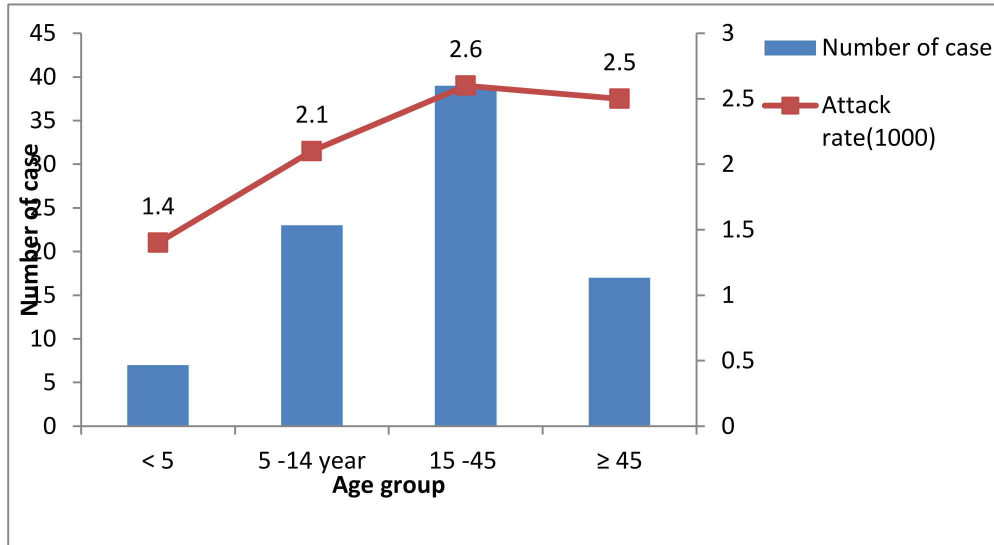



**Figure 2:** Age specific attack rate, Dera woreda, south Gonder, Amhara region, Ethiopian, 2015

The major symptoms /signs among case were mucoid diarrhea, all patient show bloody mucoid diarrhea86 (100%). (See table 1)

**Table 1:** Sign and symptoms of Dysentery, Dera woreda, South Gonder, Amhara region, Ethiopian, 2015

| Signs and Symptoms | Frequency | % |
|---|---|---|
| Diarrhea (Mucoid or Bloody Mucoid) | 86 | 100 |
| Vomiting | 18 | 20.9 |
| Fever | 64 | 74.4 |
| Nausea | 74 | 86 |
| Abdominal Cramp | 82 | 95.3 |

The duration of illness for all cases before visiting the health centers were < 24 hrs up to > 2 days & only 25.5 %( 22) of them visited the health centers within 24 hrs of their onset of illness. The mean duration of visit health facilities was 3.8. (See table 2)

## Complied Body Works

**Table 2:** Cases by duration of illness before visiting the health facility, Dera woreda, South Gonder, Amhara Region, Ethiopian, 2015

| Duration of illness before visiting health facility in Days/hrs | Frequency |
|---|---|
| Less than 24 hrs | 22 (25.5%) |
| 1 -2 Days | 49(56.9%) |
| > 2 Days | 15(17.4%) |
| Total | 89 (100%) |

From interviewed cases 48% (26), 31.4 %( 17), & 20.3 %( 5) had >6, 4 to 6 & <4 times episodes of diarrhea per 24 hrs respectively. It was also observed 59.3% of cases started Cipro-floxacilen and rest of other Co-trimoxazole treatment. For management of dehydration ORS was used based on their age.

Highest cases were registered from Arib Gebeya 4.4 per 1000 population and 3.8 per 1000 population Anibesema followed by Wef Arigif Tamri 3 per 1000 population

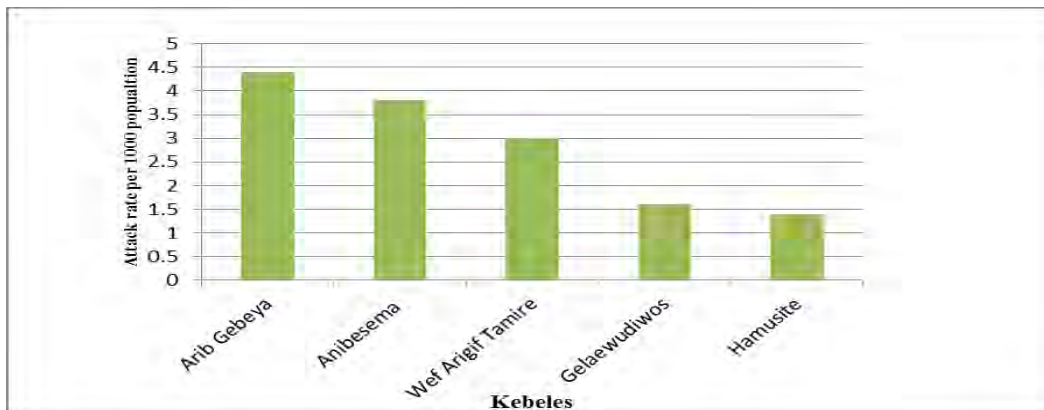



**Figure 3:** Kebele distribution of Dysentery case in Dera Woreda, South Gonder, Amhara region, Ethiopian from June 15-21 2015

The onset date of the primary case was verified on June 10, 2015. The highest cases were registered on 18 and 19 June 2015. The information from cases which show symptom of illness bloody diarrhea early (index cases) was not found to be different from other cases in having any recent travel history, feeding and drinking outside home.

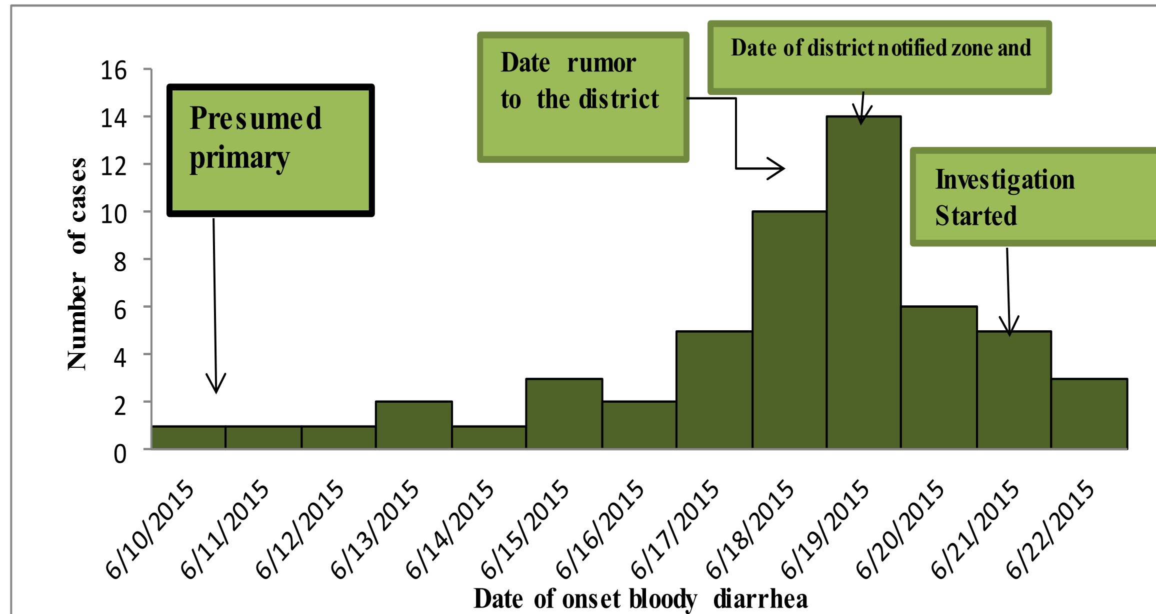



**Figure 4:** Epidemic Curve by date of onset of bloody diarrhea (interviewed cases), Dera Woreda, South Gonder, Amhara Region, Ethiopian, 2015

**Analytical investigation**

In this investigation a total of 54 dysentery case-patients and 108 neighborhood healthy controls were selected .Among a total of 54 interviewed cases , 35 (64.8%) were males and 19 (35.2%) were females, the median age of case-patients were 18 and the range was 2 -62 years old. In bivariate analysis statically significant variables were no access to latrine OR 30 (95%CI: 8.5 – 107), washing hands without soap OR 5.6 (95%CI: 2.6 -11.4), not using latrine OR 16.8 (95%CI: 7.5 -37.9), not washing of hands after using toilet OR 7.4 (95%CI: 3.6 – 15.5 ),open filled dispose of household garbage OR 8.7 (95%CI: 3.2 – 21),were risk factors for the occurrence of dysentery diseases but treating water with chemical /boil OR 0.15 (95%CI :0.06 – 0.34) were protective factors. On the other hand, Gender, Close contact with case and travel history a week before illness have no statically significant.

**Table 3:** Bivariate analysis of risk factors for dysentery outbreak, Dera woreda, South Gonder zone, Amhara region, 2015

| Variables | | Case n= 54(%) | Control n=108(%) | COR(95% CI), P-value |
|---|---|---|---|---|
| No access to latrine | Yes | 25(46.3) | 3(2.8) | 30 (8.5 – 107), P < 0.05 |
| | No | 29 (53.7) | 105(97.2) | |
| Washing hands without soap | Yes | 34(62.9) | 25(23.4) | 5.6 (2.7 – 11.4), p < 0.05 |
| | No | 20(37.1) | 83(76.6) | |
| Store food for later use | Yes | 27(50%) | 33(30.6) | 2.2( 1.2 – 4.4 ), p = 0.016 |
| | No | 27(50%) | 75(69.4) | |
| Not using latrine | yes | 41(76) | 83(76.6) | 16.8(7.5-37.9), P < 0.05 |
| | No | 13(24) | 17(15.7) | |
| Open filled disposal of garbage | Yes | 47(87) | 47(43.5) | 8.7 (3.6 – 21), p < 0.05 |
| | No | 7(13) | 61(56.5) | |
| Preparing food without washing hands | Yes | 33(61.4) | 22(20.4) | 6.1(2.9 -12.6), P < 0.05 |
| | No | 21(38.9) | 86(79.6) | |
| Not washing hands after using toilet | Yes | 38(70.4) | 26(24) | 7.4(3.6 – 15.5), P < 0.05 |
| | No | 16(29.6) | 82(76) | |
| Treating water with chemical /boil | Yes | 8(14.8) | 58(53.7) | 0.15(0.06 – 0.34), P< 0.05 |
| | No | 46(85.2) | 50(46.3) | |
| Gender | Female | 20(37) | 52(48.2) | 0.6 (0.3 -1.2), P < 0.08 |
| | Male | 34(63) | 56(51.8) | |
| Pit disposal of household garbage | Yes | 7(12.9) | 47(43.5) | 0.2 (0.08 – 0.46), P < 0.05 |
| | No | 47(87) | 61(56.5) | |
| Close contact with case | Yes | 19(35.2) | 27(25) | 1.6 (0.8 -3.3) , P= 0.17 |
| | No | 35(64.8) | 81(75) | |
| Travel history a week before illness | Yes | 8(14.8) | 7(6.6) | 2.4 (0.8 – 7.1) P= 0.09 |
| | No | 46(85.2) | 99(93.4) | |

On multivariate logistic regression analysis, risk factors that remained statistically significantly associated with the disease were no access to latrine, washing hands without soap, not using latrine. On the other hand protective factors that remained statically significantly associated with the diseases on multivariate logistic regression analysis treating water with chemical /boil.

**Table 4 :** Multivariate analysis of risk and protective factors of dysentery, Dera woreda, South Gonder Zone, Amhara Region, Ethiopian, 2015

| Variables | | Case n= 54(%) | Control n =108(%) | AOR(95% CI), P-value |
|---|---|---|---|---|
| No assess to latrine | Yes | 25(46.3) | 3(2.8) | 7.2(1.8 – 29.4), P< 0.05 |
| | No | 29 (53.7) | 105(97.2) | |
| Washing hands without soap | Yes | 34(62.9) | 25(23.4) | 5.1 (2.4 – 11.1), p < 0.05 |
| | No | 20(37.1) | 83(76.6) | |
| Store food for later use | Yes | 27(50%) | 33(30.6) | 2.5( 1.2 – 5.4 ), p = 0.015 |
| | No | 27(50%) | 75(69.4) | |
| Not using latrine | yes | 41(76) | 83(76.6) | 8 (3.1- 20.1), P < 0.05 |
| | No | 13(24) | 17(15.7) | |
| Open filled disposal of household garbage | Yes | 47(87) | 47(43.5) | 9.2 (3.7 – 22), p < 0.05 |
| | No | 7(13) | 61(56.5) | |
| Preparing food without washing hands | Yes | 33(61.4) | 22(20.4) | 4.3(1.9 -9.4), P < 0.05 |
| | No | 21(38.9) | 86(79.6) | |
| Not washing hands after using toilet | Yes | 38(70.4) | 26(24) | 5.6( 2.5– 12.1), P < 0.05 |
| | No | 16(29.6) | 82(76) | |
| Treating water with chemical /boil | Yes | 8(14.8) | 58(53.7) | 0.16(0.06– 0.39), P< 0.05 |
| | No | 46(85.2) | 50(46.3) | |
| Gender | Female | 20(37) | 52(48.2) | 1.6 (0.8-3.3), P = 0.14 |
| | Male | 34(63) | 56(51.8) | |
| Pit disposal of household garbage | Yes | 7(12.9) | 47(43.5) | 0.1( 0.04 – 0.28), P < 0.05 |
| | No | 47(87) | 61(56.5) | |
| Close contact with case | Yes | 19(35.2) | 27(25) | 1 (0.4 – 2.4) , P= 0.8 |
| | No | 35(64.8) | 81(75) | |

| Travel history a week before illness | Yes | 8(14.8) | 7(6.6) | 1.5 (0.4 – 5.1) |
|---|---|---|---|---|
| | No | 46(85.2) | 99(93.4) | P= 0.5 |

**Qualitative analysis**

**Observation community situation**

We observed different kebeles and villages in woreda, most of the local communities exist in villages without access to safe drinking water, and water was fetched directly from river and spring (see photo June 20, 2015) and there were no latrine. Besides when we observed them do not always wash their hands with soap after using toilet even when washing facilities hands-on. When clean utensils furthermost community only with water. Over all, we observed the awareness of the community to personal hygiene (wash hands thoroughly with soap, before eating, preparing food and after going to toilet), environmental hygiene, causes and prevention of diarrheal diseases.

**Figure 5 :** Fetching water from spring and canal used for drinking and other household purpose chircherit and Huletu wegedamie villages, Dera woreda, South Gonder Zone, Amhara region, Ethiopian on June, 2015

**Laboratory Investigation**

Four stool samples were collected, for microbiological culture were positives for shigella dysentery and water specimens collected from spring and pipeline were positive for shigella dysentery and positive for coliform count at $37^0$c/48 hrs /100ml was >180,Eshenerichia Coil Type 1 present and commented as bacteriologically the water is not potable and chlorination necessary.

**Intervention undertake**

First the woreda health center workers were treated cases with antibiotics, fluids (ORS) and made referral for those severe cases. The other interventions were taken awareness creation on personal and environmental hygiene issues through health education. We also monitored the antibiotic treatment and improvement cases; on the other hand discussion with woreda health officers and health center health workers on controlling the outbreak and prevention and case management of similar cases.

**Discussion**

Federal Ministry of Health (FMOH) of Ethiopia has requested that any cluster of bloody diarrhea among persons in the country be reported; outbreaks of foodborne disease including shigellosis are not commonly reported (18). Shigelloses infections are not usually fully reported to the health facilities, with less than 1% typically reported (19). The FMOH/PHEM guideline sets the threshold for epidemic detection and action as a cluster of acute bloody diarrhea cases in the same settlement in one week. Hence, unusually increased in number of the case or doubling of cases compared to the same weeks were declared an outbreak (20). Infections may be acquired from eating contaminated food and drinking contaminated water. Therefore, the peak of epidemic curve was seen on 19/05/2015 (WHO week 26) and the curve fell dawn within few days after getting its peak. This sharp increase and decrease of the epidemic curve typical a characteristic of common source type of epidemic. The cases were from different kebeles and villages with limited shared exposure points such as water sources (spring, river). The extent of this outbreak is likely to be due to water contamination. The sharp rise of epidemic curve indicated that the outbreak is point source. The latter slow decline with small peak may be due to secondary person to person spread. This has similar finding with the study done in Jimma University, The peak occurred during the start of the epidemic which suggests that there might have been common source at the beginning. Meanwhile, the cases have a date of onset which ranges from Dec 9, 2008 - Dec 31, 2008, which indicates that the epidemic has lasted for more than one incubation period. This could be due to secondary person to person transmission which is favored by crowded living condition of students (24).According to the Environmental protection Agency (EPA), only about 22.5outbreaksoccur per year, with an average of about 4,640 to 9 331 people infected annually. Those cases occurred mostly as a result of water coming from non-community systems. The EPA report that an average of 6 people per year die of

waterborne diseases, dysentery is one of the diseases (21).According to case control study, majority of cases 66.6% were use only water for cleaning utensils but 64.8% of control were using soap for cleaning utensils. This indicates that cleaning utensils only with water is risk factors for outbreak. Poor hand washing practices and no access for latrine may have also contributed to contamination. Coliform; from contamination of water samples taken from spring, river and even in pipe confirms that the sources of outbreak was water and poor hygiene even majority of cases ,there are not treating water with chemical or boiled this may results worse the cases.Sd1 infection is spread through human faeces. When people become infected with Sd1, they excrete large numbers of Sd1 organisms in their stools. If germs from these stools come into contact with food or water, other people can swallow them and become infected (22).The study tried to identify several risk factors associated with contracting dysentery in Dera woreda no access to latrine, lack of safe drinking water, shortage of water and washing hands without soap found to be risk factors for contracting dysentery such as no access to latrine AOR 7.2 (95% 1.8 – 29.4), washing hands without soap AOR 5.1 (95% 2.4 -11.1), this result shows comparative finding with the study done in Addis Ababa university Ethiopian (23). The etiological agent responsible for outbreak was shigella dysentery similarly, other parts of the world was shigella dysenteriae serotype A (4).The importance of knowing etiological agent is to first for case management then identifying risk factors for prevention management.

**Limitation**

Delay in starting the investigation lead most cases to take antibiotic therapy which prevented to collect enough biological samples and even the available transported samples couldn"t be processed and analyzed timely to identify the possible etiology.

**Conclusion**

There was an outbreak of dysentery in Dera woreda due to shigella dysentery, the most likely common source of the epidemic was contamination of water .Considering the feco-oral route, and contaminated water and food as main mode of transmission besides this poor sanitary conditions like no access to latrine, not practicing hand washing, drinking untreated water and close contact with cases could have contributed to the spread of the outbreak. Intervention measures to control the outbreak were undertaken side by side with investigation like. Action including case management, control measurement and health education at all levels, communication of the situation to all government and private health institution in Dera woreda

and cleaning of water source were made by woreda water offices. The comparatively low attack and case fatality rate in this outbreak may be attributed to the accessibility of health facilities up to Kebele, early case management and creating awareness around community.

**Recommendation**

The stakeholders at all level should work on allover diarrheal diseases prevention and control activities such as the regional health offices, zonal health offices, woreda health offices in addition regional sanitation and water offices should conduct monitoring of hygiene and availability of safe water and access to latrine for the local community, majority of community face shortage of clean water they use spring and river water. Then the zonal and woreda health officer have to increasing their surveillance activity particularly active surveillance like health extension workers have to assess cases home to home actively. Education on diarrheal diseases and risk factors for diarrheal diseases shall be given to local community. Promote the awareness of the community on the modes of transmission of Shigella dysentery.

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# Complied Body Works

**Annex 1: Dysentery Outbreak Investigation Questionnaire**

Questionnaires for Case – Control study on acute bloody diarrhea outbreak in Dera district, South Gondar zone, Amhara region, 2015

Respondent Status ☐Case ☐Control

**A. Identification Information**

1. Name of respondent --------------------
2. Gender ☐Male ☐ Female
3. Age in year --------
4. Address/ Zone ------------- District---------- Kebele---------- Village------------
5. Residence ☐ Urban ☐Rural
6. Occupation ☐Farmer ☐Student ☐ House wife ☐Trader Other -----
7. Religious ☐ Orthodox ☐Protestant ☐Muslim other-----------
8. Ethnicity ☐ Amhara ☐ Oromo ☐Tigray Other/specify-------------
9. Education status ☐not eligible ☐No education ☐Primary education ☐Secondary education ☐Collage and above
10. Marital status ☐not eligible ☐ single ☐ married ☐ Divorced/separated

**B. Epidemiological**

1. Have you traveled outside your Village? ☐Yes ☐No If yes; where? ------

3. Have you eat or drink outside your home? ☐ Yes ☐ No If yes; where? ------

5. Have you contact with another dysentery case? ☐Yes ☐ No

   If yes; who? -----------Where? --- ----------

**C. Clinical Information**

1. Sign and symptoms ☐ Diarrhea ☐Vomiting ☐Nausea ☐Abdominal cramp ☐ Fever Other specify -----------------
2. If Diarrhea is present Duration of diarrhea --- days.

   Stool frequency per days ----

   ☐ Bloody diarrhea ☐ Watery diarrhea ☐ mucoid diarrhea
3. Which did you Experience first ☐Vomiting ☐ Diarrhea Other ----------
4. Date of onset of vomiting or Diarrhea ----/-----/----
5. Date seen at health facility -----/-----/-------
6. Complication /Dehydration ☐ yes ☐ No

7. Sign and symptoms of dehydration

☐ Weakness ☐ sunken eyes ☐ Dry mouth& tongue

☐ Headache ☐ Dizziness ☐Confusion

8. Status ☐Improved ☐Not Improved ☐Worsen

9. Is it any antibiotic taken? ☐Yes ☐No ☐ I don‟t remember if yes, specify ------------

**D. Laboratory Data**

1. Sample take? ☐Yes ☐ No If yes; date taken ----/---/---

2. Result ------------

**E. Transmission to other**

1. Is there any other person with diarrhea in home or neighbored ☐Yes ☐ No

2. If yes, who is he/she? -----------------

3. Total number of family size in the household ------------

**F. Satiation and Hygiene practices**

1. Do you have access to latrine ☐ yes ☐No

2. Do you use it? ☐ Yes ☐No

3. Do you wash your hands after defecation?

☐ Yes; always ☐yes; sometimes ☐Not at all

4. Do you often wash your hands before you eat?

☐ Yes; always ☐yes; sometimes ☐ Not at all

5. Do you often wash your hands before preparing foods? ☐Yes ☐No

6. Do you store cooked foods for later use? ☐Yes ☐No

7. What do you use to clean utensils/containers for feeding?

☐ Water only ☐water with soap ☐ chemicals ☐Ash

8. Where do you dispose of household garbage? ☐Pit ☐open filed other------

**G. Water related practices**

1. From what sources do you get your drinking water?

☐ Pipe ☐Well ☐ Spring ☐ River

2. Do you treat water with chemicals/ boil for drinking? ☐ Yes ☐ No

3. How do you fetch water from your storage?

☐By Deeping ☐inclining ☐with cup always inside the storage

4. How often clean water storage? ☐< Week ☐weekly ☐2 weeks ☐> 2 week

**1.2 Scabies Outbreak investigations in Enarj Enawuga Woreda, East Gojjam Zone, Amhara region, 2015**

**Abstract**

**Background:** Scabies is ectoparasitic infection which has the long trouble humanity. It is caused by the mite Sarcoptes scabiei. Scabies occurs worldwide and its prevalence is estimated to be about 300 million cases yearly. Therefore objective of investigation was to identify risk factors, mode transmission and prompts of diagnosis and achievable intervention measures.

**Method:** Forty scabies cases and eighty community controls were recruited in October 12-20, 2015 and analyzed the risk factors for scabies with 1:2 unmatched case-control methods using structured questionnaire. To measure the significance of association we constructed Odds ratio, 95% CI and P-value in bivariate and multivariate analysis.

**Results:** A total of 56,122 of scabies cases with no death were identified during the outbreak and 28% of populations were affected. A median age of cases was 16 (range, 1-60 years), the SD was ± 14.1 years and 80 community controls with a median age of 18 (2-49 years), the SD was ±10.8 years. Scabies lesions and sore were predominately located at interdigital spaces like finger web 40 (97%). Infrequent bathing AOR 2.83 (95% CI:1.18- 6.7), taking shower without soap AOR 4.5(95% CI: 1.8 – 11.4), infrequent Washing clothes AOR 16.9 (95% CI :3.7-75.8),infrequent changing clothes AOR 7.6 (95% CI: 2.8-20.6) sleeping with scabies cases AOR 102 (95% CI 26 -402),were trigger risk factors but knowledge about scabies AOR 0.17 (95%CI 0.38-0.8) were major protective factors.

**Conclusion:** Certain environmental conditions such as overcrowding, poor personal hygiene, poverty, and lack of knowledge, which are favorable to the spread of scabies. Control programs should be put in place and implemented in an integrated manner, by reducing overcrowding, and by improving health education, personal hygiene, treatment and surveillance among high-risk population sand lastly implement massive treatment campaigns.

**Key Word:** Scabies, outbreak, Enarji Enawuga, Ethiopian

# Complied Body Works

## Background

Scabies is a contagious skin disorder and one of the most common itching dermatoses in the world especially in less developed countries. Epidemiologic survey of scabies periodically done in many countries is a reflection of general status of public health in the community (1). There is a saying that one cannot hide love, cough and itching from others (2).

Scabies is a common parasitic infection caused by the mite *Sarcoptes scabiei*. Infestations occur when the "itch" mite, *S.scabiei*, burrows into the skin and consumes host epidermis and sera. The predominant disease manifestations are mediate through inflammatory and allergy-like reactions to mite products, leading to intensely pruritic lesions (3). Infestation is transmitted through a direct contact with an infected person or animal, rarely also via objects, underwear, or bed linen. The adult female mite is 0.3-0.5 mm long and has four pairs of legs. A female of *S.scabiei* can survive around 30 d in the host‟s body penetrating into the *stratum corneus* of the skin and laying eggs in the burrow. Outside the host, it can survive from 3 to 10d comprising, along with the other invasive stages the larvae and nymphs (4).

The classic manifestations of scabies include generalized itching which often becomes worse at night and abnormal skin lesions(papules, pustules, nodules, and occasionally urticaria).The skin lesions are often noted on wrists, finger webs, axillae, the per umbilical region, abdominal wall, genitals and buttocks(5). Generally, Scabies causes intense itch, severely affecting, sleep and quality of life. Crusted scabies, a severe infestation with thousands of mites, is associated with extremely high risk of contagion and causes considerable morbidity. Complications and mortality may occur due to secondary bacterial infections (6).

Scabies affects people from every country and is one of the commonest dermatological conditions in the world. It occurs worldwide and its prevalence is estimated to be about 300 million cases yearly (7). In the same way scabies affect more than 130 million people worldwide at any one time, with the highest rates occurring in countries with hot, tropical climates, where infestation is endemic(8). The predominant cause of itching in developing country is the highly contagious parasitic disease called "scabies". In this developing country, people being trapped in a vicious circle of poverty, overcrowding, poor housing, malnutrition, ill health; are still fighting with communicable diseases as well as emerging non-communicable diseases(1).Scabies affects people of all countries, particularly the most vulnerable sectors of society. Children in developing countries are most susceptible, with an average prevalence of 5-10 %( 9).

Epidemiological studies indicate that the prevalence of scabies is not affected by sex, race, age, or socioeconomic status. The primary contributing factors in contracting scabies seem to be poverty and overcrowded living conditions (10). Despite this, certain groups are more affected by the disease than others are. Scabies is most commonly observed in the very young, followed by older children and young adults. Institutions where scabies is endemic, this most likely reflects reduced immunity as well as increased exposure (11). Poverty and overcrowding are the main risk factors, and outbreak in institution and refugee camps are common (9)

The most common source of transmission is prolonged skin-to-skin contact with an infected individual (handholding, sexual contact, etc.). It takes *c.* 15–20 min of close contact for successful direct transmission, and for this reason, scabies is also consider a sexually transmitted disease. Interfamilial transmission is frequently report, genotyping results confirm long-held beliefs that transmission events for *S. scabiei* tend to be localize in time or space, and that the family/household is the focus of transmission (12).

Scabies is endemic in many tropical and subtropical areas, such as Africa, Egypt, Central and South America, northern and central Australia, the Caribbean Islands, India, and Southeast Asia (13). Scabies is list among the top 50 most prevalent diseases worldwide, with a global prevalence of 100,625,000 in 2010 (1.5% of the world population) (14). Recently the World Health Organization added scabies to the list of „„Neglected Tropical Diseases"", thereby recognizing its impact on human health. The International Alliance for the Control of Scabies, a newly formed organization, proposes to accomplish scabies control in vulnerable communities in 2013 (15).

**Objectives**

**General objective**

To investigate the outbreak epidemiologically and identify the risk factors for the occurrence of the outbreak and provide appropriate control & prevention measures of the disease

**Specific objectives**

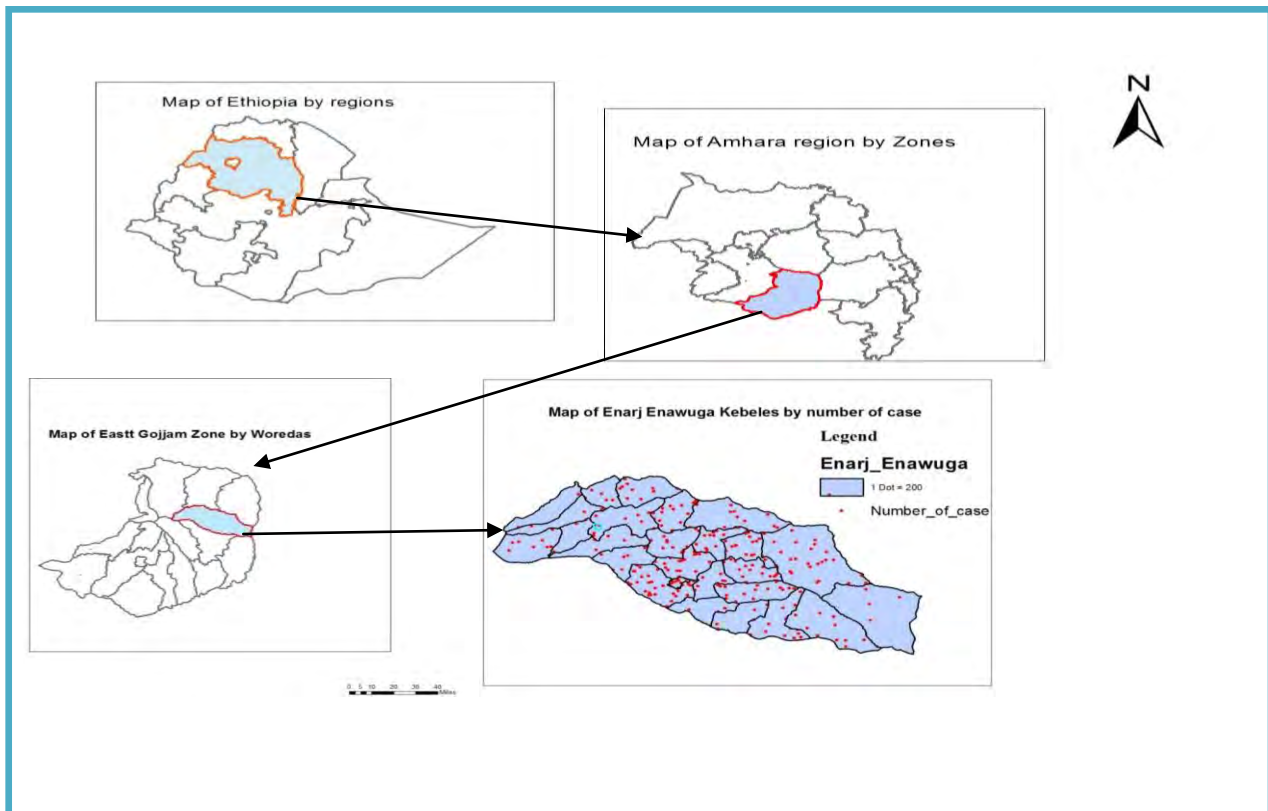
- To confirm the outbreak
- To describe the outbreak by time, place and person
- To analyze risk factors and measure the attack rate of the outbreak.
- To determine the magnitude of the outbreak
- To guide appropriate prevention and control measures to stop further spread of the disease.

## Complied Body Works

**Materials and Methods**

**Study area and population:**

The outbreak investigation was conducted in one kebeles Gedeb Eyasu of Enareje Enawuga district, East Gojjam zone, and Amhara regional state. Gedeb Eyasu-kebele is one of 27 kebeles of Enarji Enawuga district. The district is located 293kms south of Addis Ababa, 198 km from the regional town Bahir Dar. The district shares boundaries with four districts to the South Wollo East, Hulet-Eju and Debay to the West, Goncha-siso to the North and Enemay to the South. The catchment area of the district is 96,095.25 hectare with a total population of 201,003 (166,616 rural and 34,387 Urban). Male account 100,843 (50.2%) of the population and 27,216 under five year age of children. The median annual rain fall is with range 1000-2000mm, median temperature of with the range of 15-20$^0$c and Altitudes with range 1500-2800mm. The religious composition is 99.9% orthodox tewahido followers and 0.1% is followers of other religious. The district has 3 urban and 27 rural health posts, 7 health centers which are currently on service .The physical health service coverage of the district is 100%.




**Map 2:** Map of Enarj Enawuga woreda, East Gojjam zone, Amhara Region, Ethiopia 2015

## Complied Body Works

**Study period:** the study was conducted from October 12-20, 2015

**Study Design:** Unmatched case-control study was used to conduct.

**Target population:** All population in Enarji Enawuga district where cases and controls recruited

**Study population:** All cases and populations from who controls were recruited

**Sample size:** Simple random sampling method was employed to recruit cases and controls. Sample size was calculated Epi-info 7 stat calc for unmatched case-control study

Two sided confidence level (1-α) =95%

Power (% chance of detecting) = 80%

Ratio of controls to case= 1: 2

Proportion of controls with exposure = 10 %( 15)

Least extreme odds ratio to be detected = 4.5 (21)

Proportion of case with exposure = 33.3 %

Therefore, the sample size was calculated using Epi info stat calc, 120 samples 40cases and 80 controls were selected.

**Standard Case Definitions:**

**Suspected case:** A person with signs and symptoms consistent with scabies

**Confirmed case:** A person who has a skin scraping in which mites, mite eggs or mite feces have been identified by a trained health care professional

**Contact:** A person without signs and symptoms consistent with scabies who has had direct contact (particularly prolonged, direct, skin-to-skin contact) with a suspected or confirmed case in the two months preceding the onset of scabies signs and symptoms in the case

**Operational Definitions**

Mild (5or less) – 5 or less of body part affect by lesion or sore

Moderate (6-10) – 6-10 of body part affect by lesion or sore

Severe (11-49) - 11-49 of body part affect by lesion or sore

Very severe (50 – more) – 50 or more of body part affect by lesion or sore

Infrequent bathing – more than a week take shower

Infrequent washing clothes – more than a week wash clothes

Infrequent changing clothes – more than a week changing clothes

**Variables**

**Dependent Variable**

Scabies infection

**Independent Variables**

Age, Sex

Knowledge about scabies

Hygiene and sanitation practices

Number of family

**Data collection method**

The study was conducted by house-to-house search for scabies case in each selected kebeles and village. We used semi-structured questionnaires and interviewed cases and controls, and collected data such as demographic, clinical pictures, risk factors and skin examination and other related variables for scabies. Data was collected by principal investigator and co-investigator including woreda PHEM officer, heath center worker.

**Qualitative data collection**

In- depth Interviews were conducted using a semi – structured interview with key informants Woreda health office, Woreda administration office, Woreda education office and with community member of society about food and water insecurity, school dropout rate, if they are recognize outbreak, then identify causes of outbreak, what control measure should they take.

Observational assessment was done, such as hygiene and sanitation, overcrowding, season (climate change), in this year there is climatic change at national level EI- Niño. So, focus group discussion was done with community about food insecurity, water supply shortage and also scabies outbreak. In addition to this living condition of the families of both case and control like overcrowding is important factor in the spread of scabies, especially sleeping quarters lastly, poverty also leads to other associated problems, such as poor nutritional status, which may in turn contribute to the immune status of the individual and level of disease within the community.

**Data Quality Control**

Data was collected by six people (principal investigator, co-investigator, two Woreda PHEM officer and two health center staff) .Two day orientation was given. The first day orientation was about scabies disease since scabies is not reportable diseases and they are not familiar to this, the orientation was given by Dr Wendemagegn (Dermatologist) from FMOH. The second day

orientation was about total screening of scabies cases to estimates the prevalence of scabies in woredas and on the questionnaire was given to the data collectors. The collected data was verified daily during the investigation period and in addition to this when entering the data in to the computer the missing variables and consistency of filling of questionnaires and completeness of data was checked out carefully.

**Data entry and Analysis**

Data was checked, entered and analyzed on computer using Epi info 7, MS- Excel and Arc GIS were used. Descriptive and analytical statically analyses were under taken. Logistic regression analysis was conducted to find association of illness with risk factors and exposure outcome were measured and tested using OR, 95% Confidence Interval. Results were presented using graphs, tables, charts and attack rate were also calculated.

**Ethical issue**

The outbreak investigation was done after the approval of Amhara regional Public Health Emergency. Informed Consent was taken from all respondents for under 18 years old we obtained informed consent form their parents or guardians and study participants found scabies were linked to health centers (refer to health center).

## Results

**Descriptive Epidemiology**

We identified 56122 cases of scabies with no death. The index patient was no specifically known but the primary case start from Debrework priest students (Yekise temarie).Case control study was conducted, there were 40 scabies cases (21 males and 19 females) with a median age of cases was 16 (range, 1-60 years), the SD was ± 14.1 years and 80 community controls (37 males and 43 female) with a median age of 18 (2-49 years), the SD was ±10.8 years. The number of cases among males and females were: Female accounts 30426(54.3%) (Table 2) .The cases distributed by age groups in which, attack rate of 31.7% was observed among the 2-5 years of age followed by 29.05%% among 6-14 and the overall attack rate 27.6% in all age group (see table-5).

**Table 5:** Age specific attack rate, Enarji Enawuga Woreda, East Gojjam zone, Amhara region, Ethiopian 2015

| Age Group | Number of cases | Total No of population | Attack rate (%) |
|---|---|---|---|
| < 2 | 1456 | 10151 | 14.3 |
| 2-5 | 5477 | 17235 | 31.7 |
| 6-14 | 17235 | 59324 | 29 |
| 15-59 | 31954 | 116293 | 27.8 |
| Total | 56122 | 203003 | 27.9 |

**Table 6**: Distribution of Scabies cases by sex in Enarji Enawuga Woreda, East Gojjam zone, Amhara region, Ethiopian 2015

| Sex | Frequency | Percent (%) | Population | Rate/100 |
|---|---|---|---|---|
| Female | 30426 | 54.3 | 100843 | 30.1% |
| Male | 25696 | 45.7 | 100160 | 25.6% |
| Total | 56122 | 100 | 201003 | 27.9% |

From a total of 27 Kebeles affected in Enarji Enawuga woreda, the highest prevalence of scabies cases were reported from Aba Jemiber Kebele (72.2%) , Agamna Deje (66%), Arar (48.6%) .(See figure 6).

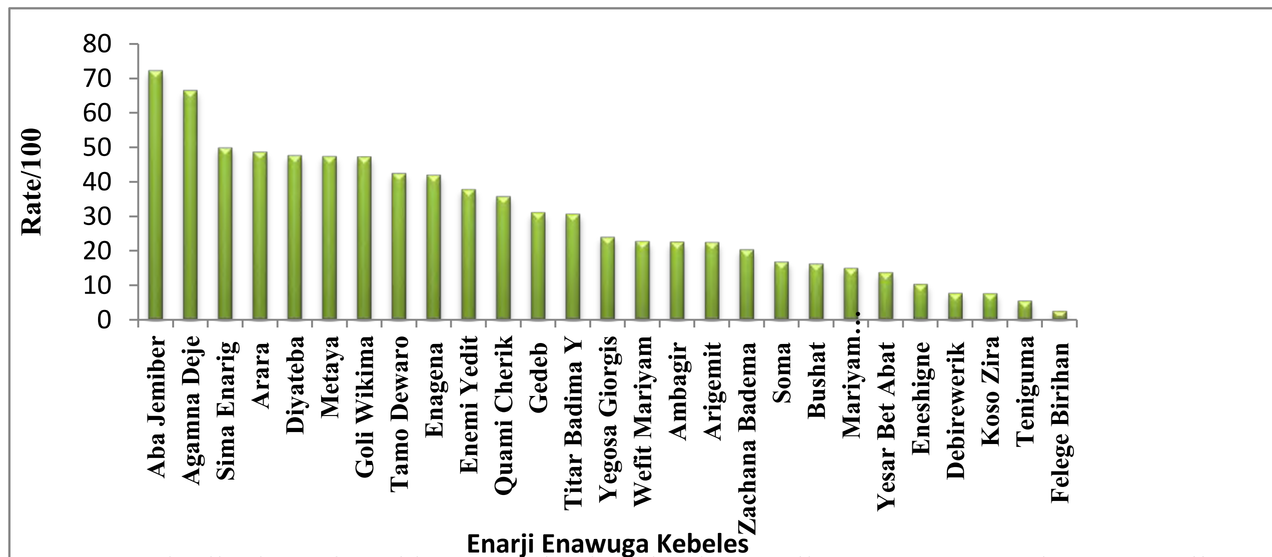



**Figure 6:** Distribution of Scabies cases by kebeles in Enarji Enawuga Woreda, East Gojjam zone, Amhara region, Ethiopian 2015

The reported cases, first experience sign and symptoms, majority cases 39(97.5%) presents with itching followed by 1 Rash (2.5%).All the cases 100% present intensity of itching is high at night .

43 respondents were under 18 years of age that means they are not eligible, so excluding them, 41(34.2%) of them married, followed by single 32 (26.7%) and divorced 4 (3.3%) respectively .Among the 120 respondents , majority 43 (35.8%) were in primary education and 33 (27.5%) were no education or illiterate (see table-7).

**Table 7:** zone, Amhara region, 2015Distribution of the respondents by their level of education, Enarj Enawuga Woreda, East Gojjam

| Level Education | Number | Percentage |
|---|---|---|
| No education | 32 | 26.6 |
| Not eligible | 14 | 11.6 |
| Primary education | 46 | 38.3 |
| Religious education | 17 | 14.1 |
| secondary education | 11 | 9.1 |
| TOTAL | 120 | 100 |

The occupations of the respondents, Majority of respondents were Farmers and students 43(35%) and followed by 18(14%) were not eligible for work.

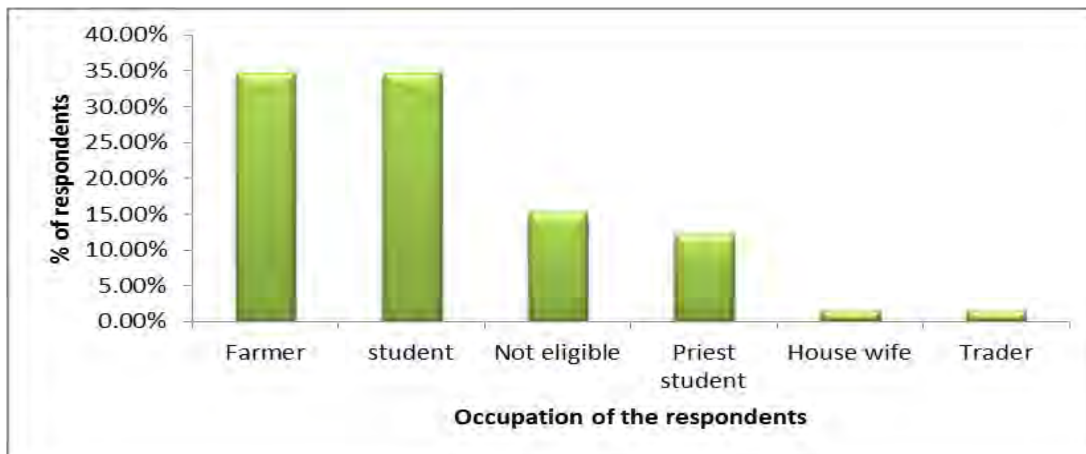



**Figure 7:** Distribution of respondents according to their occupation, Enarj Enawuga woreda, East Gojjam zone, Amhara region, 2015

Three groups were made according to their number of family members. Majority (69, 57.5%) respondents had family members 4 - 6 and the mean of the persons living in each room was 4.69 with SD of ±1.93 (see table- 8).In additional to this, thoroughly all cases and controls were belong to the orthodox Christian followers 120 (100%).

**Table 8:** Respondents distribution regarding number of persons living in each room, Enarj Enawuga woreda, East Gojjam, Amhara region, Ethiopian, 2015

| Persons living per house | Number | Percent (%) |
|---|---|---|
| **1-3** | 34 | 28.3 |
| **4-6** | 69 | 57.5 |
| **7-10** | 17 | 14.2 |
| **Total** | 120 | 100 |

**Skin examination**

When seen scabies skin examination form 40 cases, 37(92.50%) were seen scabies lesion and 39 (97.5%) were also seen skin sore from these eight cases (42%) presented with crusted/Norwegian scabies. When we see skin sore almost half of cases 26 (66.67%) were look crusted (infected scabies).

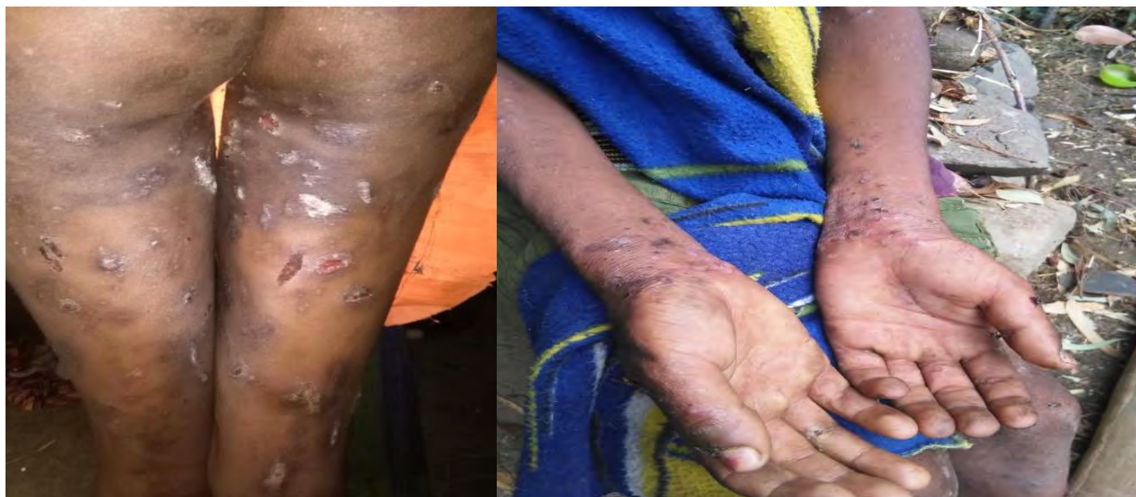


**Figure 8:** Persons who infected by scabies in Enarj Enawuga woreda, East Gojjam zone, Amhara region, 2015

Majority of cases were Moderate (6-10) lesions and sores and only three cases very severe (0-50) infected by scabies (See figure 9) .These lesion were predominantly located at interdigital spaces

like finger webs 40 (97%), ulnar side of the hand 27 (65.8%), and other mostly inter Gluteal area (see Table 9)

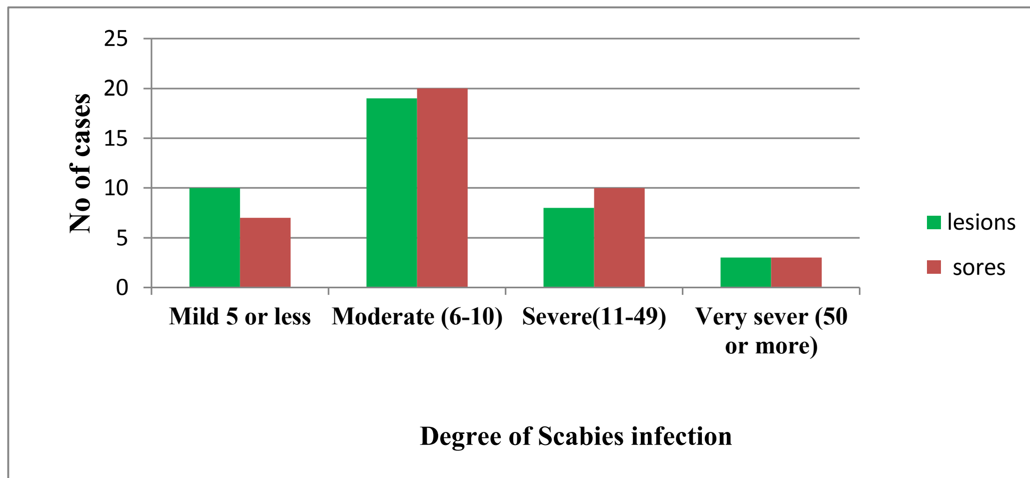



**Figure 9:** Degree of scabies infection in body part by levels, Enarj Enawuga woreda, East Gojjam zone, Amhara region, 2015

**Table 9:** Types of lesions found in 41 cases with scabies in Enarji Enawuga district, East Gojjam zone, Amhara region, 2015

| Location of Lesions and sores | No of cases | % |
|---|---|---|
| Finger webs | 40 | 97.5 |
| Ulnar border of the hand | 27 | 65.8 |
| Elbow | 16 | 39 |
| Wrist | 8 | 19.5 |
| Anterior axillaries line | 16 | 39 |
| Umbilicus | 5 | 12.2 |
| Inter Gluteal line | 25 | 60.9 |
| Genital male | 3 | 7.3 |
| Inner aspects of thighs | 21 | 51.2 |

All 41 affected cases were from 3 kebeles. We can‟t identify the index case consequently; the primary cases observed among priest students (Yekolo temarie) and later on progressed to the community. The onset of the outbreak was on 1 of February, 2015. Peak cases were seen in August /2015(see figure 10).

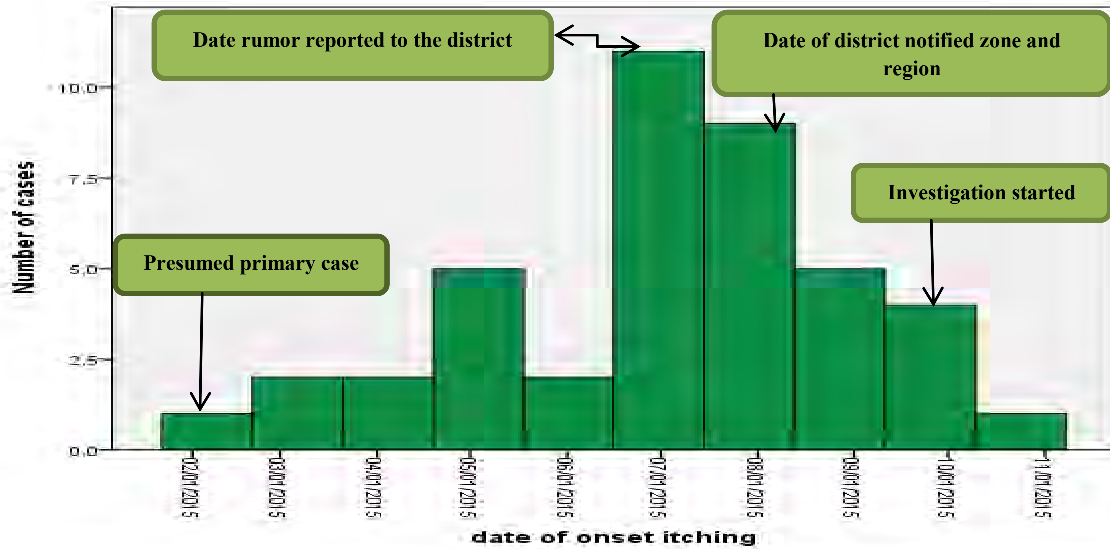



**Figure 10:** Epidemic curve of Scabies cases by date of onset of itching, Enarj Enawuga woreda East Gojjam Zone, Amhara region, 2015

**Analytic epidemiology**

We recruited 40 scabies cases with 80 controls. The median age of the cases was 16 (range, 1-60) and community controls was 17 and range was 2-49 years old. The statically significant variables in bivariate analysis are sleeping with other OR 3.9 = (95% CI 1.7 – 9.0), infrequent bathing OR 3.46 (95% CI=1.5-7.6), taking shower without soap OR4. 5 (95% CI 1.9 – 10.9), infrequent washing clothes OR 19 = (95% CI 4.2`0- 84.1), infrequent changing clothes OR = 8.46(95% CI 3.56 -20.06), sleeping with scabies cases OR = 97 (95% CI 24.8-381.2), were risk factors. On the other hand, knowledge about scabies OR = 0.13 (95%CI 0.04-0.41) were protective factors. Age and sex have no statistically significant at p –value ≤ 0.05.

**Table 10:** Bivariate analysis of risk and protective factor for Scabies outbreak, Enarj Enawuga Woreda, East Gojjam zone, Amhara region, 2015

| Variables | | Case (n=40) | Control (n=80) | COR(95%CI), p-value |
|---|---|---|---|---|
| Taking shower without soap | Yes | 18(45%) | 13(16.2%) | 4.5(1.9-10.9), |
| | No | 22 (55%) | 67(83.8%) | P < 0.001 |
| Sleeping with other | Yes | 29 (72.5%) | 32 (40%) | 3.9( 1.7- 9.0), |
| | No | 11(27.5%) | 48 (60%) | P =0.01 |
| Infrequent bathing | Yes | 25(62.5%) | 26(32.5%) | 3.46(1.5- 7.6), |
| | No | 15(37.5%) | 54(67.5%) | p =0.002 |
| Infrequent washing clothes | Yes | 38 (48.7%) | 40 (50%) | 19 (4.2-84.1 ), |
| | No | 2(4.8%) | 40(50%) | p<0.001 |
| Infrequent changing clothes | Yes | 29(60.4%) | 19 (23.7%) | 8.46 (3.5- 20 ), |
| | No | 11 (15.3%) | 61(76.3%) | P <0.001 |
| Bath someone else with the diseases in the previous six weeks | Yes | 21(72.5%) | 5(6.3%) | 16.3(5.4- 49 ), |
| | No | 19(47.5%) | 75(93.7%) | P< 0.001 |
| Put on clothes of someone else with the diseases in the previous six weeks | Yes | 21(52.5%) | 9(22%) | 8.5(3.38-21), |
| | No | 19(47.5%) | 71(88%) | P<0.001 |
| Sleeping with scabies case | Yes | 37(92.5%) | 9(11.2%) | 97(24.8-381), |
| | No | 3(7.5%) | 71(88.8%) | P < 0.001 |
| Number of family | ≥4 | 24(60%) | 29(36.3%) | 2.6(1.2-5.7), |
| | <4 | 16(40%) | 51(63.7%) | P = 0.015 |
| Sex | Female | 20(50%) | 43(53.7%) | 0.86(0.40-1.8), |
| | Male | 20(50%) | 37(46.3%) | P=0.8 |
| Age | <15 | 18(45%) | 32(40%) | 1.2(0.5-2.6),P=0.6 |
| | ≤15 | 22(55%) | 48(60%) | |
| Knowledge about scabies | Yes | 20(50%) | 43(53.7%) | 0.13(0.04-0.41), |
| | No | 20(50%) | 37(46.3%) | P<0.001 |

On multivariate logistic regression analysis, risk factors that remained statistically significantly associated with the diseases were taking shower without soap, sleeping with other, infrequent bathing, infrequent washing and changing clothes, put on clothes of someone else with the diseases in previous six weeks and number of family four and above. On the other hand, protective factors that remained statistically significantly associated with the diseases on multivariate logistic regression analysis were knowledge about scabies.

**Table 11:** Multivariate analysis of risk and protective factors of scabies, Enarj Enawuga woreda, East Gojjam Zone, Amhara Region, Ethiopian, 2015

| Variables | | Case (n=40) | Control (n=80) | AOR(95%CI), p-value |
|---|---|---|---|---|
| Taking shower without soap | Yes | 18(45%) | 13(16.2%) | 4.53(1.8-11.4), P = 0.001 |
| | No | 22 (55%) | 67(83.8%) | |
| Sleeping with other | Yes | 29 (72.5%) | 32 (40%) | 3.8( 1.6- 9.1), P =0.02 |
| | No | 11(27.5%) | 48 (60%) | |
| Infrequent bathing | Yes | 25(62.5%) | 26(32.5%) | 2.83(1.18- 6.7), p =0.019 |
| | No | 15(37.5%) | 54(67.5%) | |
| Infrequent washing clothes | Yes | 38 (48.7%) | 40 (50%) | 16.9 (3.7-75.8 ), p<0.001 |
| | No | 2(4.8%) | 40(50%) | |
| Infrequent changing clothes | Yes | 29(60.4%) | 19 (23.7%) | 7.6 (2.8- 20.6), P <0.001 |
| | No | 11 (15.3%) | 61(76.3%) | |
| Bath someone else with the diseases in the previous six weeks | Yes | 21(72.5%) | 5(6.3%) | 14.9(4.4- 50 ),P< 0.001 |
| | No | 19(47.5%) | 75(93.7%) | |
| Put on clothes of someone else with the diseases in the previous six weeks | Yes | 21(52.5%) | 9(22%) | 9(3.4-21.8), P<0.001 |
| | No | 19(47.5%) | 71(88%) | |
| Sleeping with scabies case | Yes | 37(92.5%) | 9(11.2%) | 108(26-402), P < 0.001 |
| | No | 3(7.5%) | 71(88.8%) | |
| Number of family | ≥4 | 24(60%) | 29(36.3%) | 2.8(1.1-6.9),P = 0.019 |
| | <4 | 16(40%) | 51(63.7%) | |
| Knowledge about scabies | Yes | 20(50%) | 43(53.7%) | 0.17(0.38-0.8),P=0.028 |
| | No | 20(50%) | 37(46.3%) | |

## Complied Body Works

### Qualitative analysis

Discussion was done among affected people by scabies, health facilities workers, committee of community HDA and school teacher. The discussion was assessed all issues they raise so many questions some of them water problem to do hygiene practices like to take shower and washing clothes even in school setup there is no water access. Generally to get water they must go at least 5 hours from their home and almost all spring were dry because of climate change EI-Nino.

The other problem they were discuss is overcrowding in student class it is favorable condition or precipitating factor for spreading of scabies and because of scabies is high contagious diseases so that, student dropout rate were high in these year( 4% dropout rate).

We observed different villages, the local communities reside in villages without access to safe drinking water even spring water so when we saw most of peoples they wear their clothes for long time and they are not take shower for pervious weeks even months.

### Interventions undertaken

In a community with prevalence less than 15% the advised treatment will be individual and contact (family member) management. But in Enarji Enawuga Woreda the prevalence rate was 29% so we need to give mass treatment for all population based on prevalence rate. Treatment was given for adult 25% BBL once per day for 3 days or for children above 2 Years old 12.5% BBL once per day for three days and leave on for 1 day before washing off. All the skin below the neck should be treated, including the genital, buttock, palm and soles and under the nails. On other hand for children under 2 years, pregnant and breast feeding women, 5 to 10 % sulfur topical application once per day for three days. The other important treatment drug in in mass treatment Ivermectine oral 200 micrograms/kg once to be repeated after two weeks.

The other interventions were taken awareness creation on all household contacts should be treated at the same time even if asymptomatic and Reapply the topical scabicide to the hands if they are washed during the treatment period (in 8 hours after application of the medication). Clothing, bedding, and linens used by an infested individual during the seven days prior to and during treatment should be washed or cleaned and dried sun or putting clothes in a plastic bag for two days and above is also effective in letting the mite die. Routine cleaning of the house and health education on prevention is important to avoid reinfection.

**Discussion**

As we know, in our country there are no much studies about scabies, so that this study was conducted to identify risk factors for scabies in this district as well as Ethiopian. Scabies is a global problem and has been reported in Japan, Pakistan, America and Spain (16). Early diagnosis of scabies infection is important because of its highly contagious nature. However, scabies is not an infection disease commanded to be reported to the national hygiene organization in most countries, perhaps due to its minimal fatality rate and treatable nature (17).

Few studies reveal that scabies is significantly more prevalent among families of large size, high crowding index, low socioeconomic condition and those receiving their water supply from a hand pump (18).we found majority respondents both in case and control 70 (56%) were using spring water supply as we know the spring were dry because of climate changes so there was huge shortage of water. When we see families‟ members‟ size, majority of 68 (54%) respondents had family member 4-6 in each room, it is similar to studies done in Bangladesh Dhaka medical college, and majority 107 (50.7%) respondents had family members 4-6(19). In these studies maximum respondents were infected by family members. A good number from 40 cases 30 (78%) were sleeping with contracted scabies cases and 20 (54%) were put on clothes someone infected person in the previous 6 weeks. Realizing that mites can‟t easily survives without body part but with long contact and its contagious nature putting on clothes someone infected by scabies in pervious 6 weeks and sleeping with contracted scabies cases was found to be an important positive predisposing factor for the evolution of scabies in this study(19) . Other studies reveal that scabies is not read transmitted by clothing bed sheets or their fomites but this mode of transmission should be considered with cases of crusted (sever scabies ) due to extreme burden(22).

On survey report that scabies is most commonly observed in very young followed by older children and young adults (23).In our study most cases were children 31% from 2-5 years old followed by 29% from 6-14 years old children. Major symptoms which identified in this outbreak were itching and worse at night. Generally Itching is the main symptom of scabies. This is often severe and tends to be in one place at first (often the hands), and then spreads to other areas. The itch is generally worse at night and after a hot bath. You can itch all over, even with only a few mites, and even in the areas where the mites are not present (23).

In crude and adjusted analysis more than a week take shower, wash clothes as well as change clothes were significantly associated with scabies. In fact in other studies scabies is not influenced by hygiene practices or the availability of water, as demonstrated by institutions outbreaks where high standards of hygiene exist, and by the experience among Kuna Indians, the indigenous population of panama, population in which careful daily personal hygiene is traditional (19) but in our setup scabies cases were related to hygiene practices.

The sites of predilection are chiefly the finger webs, ulnar border of the hand, anterior axillaries line, elbow and wrist. Almost all cases account of itching, some of have rash and its ability to spread among people because scabies spreads predominantly by personal contact. Scabies is a very exciting disease as its occurrence is related with a great number of variables and the disease is manifested by a variety of lesions. Scabies was found to have no respect for age, sex, place, occupation, social status or race. It is prevalent throughout the world in all age groups and in both sexes, but the incidence is high in underdeveloped countries due to overcrowding and poor personal hygiene. Like in Enarj Enawuga district they experience poor personal hygiene so that they are easily contracted with scabies.

In these studies more than a week taking shower and washing clothes, without detergents taking shower, and put on clothes of someone who was diseases in the previous six weeks are identified risk factors for scabies infection. Since delayed diagnosis of scabies may results in its direct or indirect spread in districts so, we have to be particularly alert with these patients having risk factors and take measures for this problem.

**Limitation**

There were limited studies or researches in scabies especially Africa as well as Ethiopian

**Conclusion**

Scabies continues to be a silent health problem in our community. In this study, scabies is transmitting to person to person by sharing clothes, sleeping with contracting scabies case; bating someone else with scabies cases. Therefore, it seems that education about the signs and transmission method of this disease to high risk groups will help greatly to reduce the prevalence of scabies and prevent probably future epidemic. Increasing knowledge about scabies diseases and having good hygiene are the proper methods for controlling scabies in the community.

We found risk factors for Scabies are crowded family( AOR 2.8 95% CI;1.1-6.9),personal hygiene and contact with infected person .Therefore to prevent scabies, prolonged physical

contact with infected people must be restricted, sharing clothes and bed must be prevented. Training people about scabies, correct treatment method, the importance of washing clothes and good take care of personal hygiene. Lastly this one is hopeful that the findings of this study may be a useful tool for future research and planning for preventing and control of scabies and its compilations.

**Recommendation**

- The woreda health office and health workers especially HEW have to increase their surveillance activity particularly active surveillance this means they have to assess cases home to home actively since, scabies diseases affect more people because of late detection and response of outbreak
- Education on scabies and different risk factors for scabies diseases shall be given in health center, community center (Edir, Ekub) and at school. Promote the awareness of the community on the modes of transmission scabies.
- Since scabies is not reportable diseases and they are not familiar to this, the orientation was given for health workers. There must have been treatment guideline for scabies diseases in all health facility and all health worker must be train about scabies
- Education on scabies for religion student (Yekolo temarie) about personal hygiene and housing condition.

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**Annex 2: Scabies outbreak investigation Questionnaire**

Questionnaires for case – control study on Scabies Outbreak in Enarji Enawuga District, East Gojjam zone, Amhara region

Code ☐ Date ------/--------/------------

Respondent Status ☐ Case ☐ Control

**A. Identification Information**

1. Age --------
2. Sex ☐ Male ☐ Female
3. Residence ☐ Urban ☐ Rural
4. Occupation ☐ Farmer ☐ Student ☐ House wife ☐ Trader
5. Religious ☐ Orthodox ☐ Protestant ☐ Muslim ☐ Other --------------
6. Marital Status ☐ Not eligible ☐ Single ☐ Married ☐ Divorced
7. Educational Status ☐ Not eligible ☐ No education ☐ Primary education ☐ Secondary education ☐ Collage and above

**B. Epidemiological**

1. Total number of family members who live in the house ----------
2. Number of Families affected -----------
3. With whom do you sleep? ☐ Alone ☐ Wife/Husband ☐ Brother/Sister ☐ Friends ☐ Other
4. Has the person whom you are sleeping with contacted Scabies ☐ Yes ☐ No

**C. Clinical Information**

1. Which sign and symptom did you experience first? ☐ Itching ☐ Rash
2. Data of onset of: Itching ……………. Rash ………………..
3. When is itching is intense? ☐ Daytime ☐ At night
4. Is Rash Seen? ☐ Yes ☐ No
5. Have you been infected with before ☐ Yes ☐ No

**D. Skin Examination**

1. Can you see scabies Lesions ☐ Yes ☐ No
2. If yes, how long is the duration? ---------
3. If there are lesions, How many?

☐Mild (5 or less) ☐Moderate ☐ Severe (11-49 ☐Very sever (50-More)

4. Which body part is mostly affected?

☐Finger Webs ☐ Ulnar border of the hand ☐Elbow

☐Anterior axillaries line ☐Umbilicus ☐ Inter Gluteal area ☐Inner aspect of thighs

☐ Face, palm and sole (children)

5. Do the scabies lesions look infected? (Pus filled sores or crusted sores over the scabies lesion) ☐Yes ☐ No

6. Is anyone else in the household is complaining of itchiness?

☐ Yes ☐ No

7. Does it look like crusted/Norwegian Scabies? (Generalized scaling and crusting of skin)

☐ Yes ☐ No

**E .Skin Sore Assessment**

1. Can you see any Skin sores ☐ Yes ☐ No
2. If yes sores, how many? ☐Mild (5 or less) ☐Moderate (6-10) ☐ Severe (11 -49

   ☐ Very sever (<50)

3. Which body part is mostly affected? ?

   ☐ Finger Webs ☐Ulnar border of the hand ☐ Elbow

   ☐ Anterior axillaries line ☐ Umbilicus

   ☐ Inter Gluteal area ☐Inner aspect of thighs

   ☐ Face, palm and sole (children)

4. Do any the sores look crusted (infected scabies)? ☐Yes ☐ No
5. Are there any of the sores pus filled (include infected scabies)? ☐Yes ☐ No

**F. Sanitation and Hygiene**

1. How often do you take shower?

   ☐ Weekly ☐Every other week ☐ Monthly ☐ Quarterly

   ☐ Once a year ☐ Never

3. What do you use detergents to take shower?

   ☐ Water only ☐water with soap ☐other ------------

4. Have you bathed someone else with the disease in the previous six weeks?

   ☐Yes ☐ No If yes, who is he/she ……………?

4. Do you wash your clothes? ☐ Yes ☐ No
5. If yes, how often do you wash your clothes

   ☐ Weekly ☐ every other week ☐ monthly ☐ every two month

   eve ☐ three month or not at all
6. Have you put on clothes of someone who was diseased in the previous six weeks

   ☐ Yes ☐ No
7. When do you change your clothes that you wear now?

   ☐ Every day ☐ every other day

   ☐ Every week ☐ Monthly ☐ Can"t change
8. What are the sources of water for your drinking water?

   ☐ Pipe ☐ Well ☐ Spring ☐ Rive
9. Have you ever heard about scabies disease prevention, treatment and transmission?

   ☐ Yes ☐ No
10. If yes on question 9, where and when did you hear about scabies? -------------------

# Complied Body Works

## Chapter II – Surveillance Data Analysis Report

### Surveillance data analysis of HIV patients in Felege Hiwot Referral Hospital ART center, Bahir Dar, Amhara Region, Ethiopia 2010 – 2014

**Abstract**

**Background:** HIV/AIDS has been documented as one of the major public health challenges in the world. According to the World Health Organization (WHO), there were approximately 36.9 million people worldwide living with HIV/AIDS at the end of 2014. Sub-Saharan Africa has the most serious HIV and AIDS epidemic in the world. In Ethiopian, The 2014 estimated number of people living with HIV (PLHIV) was 769 600 with 15 700 new HIV infections and 35 600 AIDS-related deaths. Amhara region has the second largest number of HIV infected persons in Ethiopia

**Methods:** Secondary data of HIV for the past Five years (2002-2004 E.C) were collected, analyzed and interpreted from July 15 to August 28/2015. Data was collected from ART center on daily registration of new HIV cases in Data Base Management system (DMS)and Institutional based Descriptive cross sectional study design was used. The collected data was analyzed by using Microsoft Excel 2007 & Epi-info version 7 in respect to important variables.

**Results:** A total of 3321 new HIV/AIDS cases and 40 deaths reported respectively from year 2010-2014.The average number of cases were 664 (20%), the range between 426 and 886 cases, and standard deviation (SD) of 181. The highest proportion (19/1000) in 2010 followed by 15/1000 in 2011, it seems decreased from year to years, aged from> 15 years are affected than any other age group 19/1000 but the age specific mortality rate is higher in people aged < 5 years 26/1000. Morbidity is higher in females 1119 (58%) than males 1410 (42%) on the reverse, the mortality was higher in males 21 (58%) than in females 19 (42%).Majority of patients 3202 (96.42%) had Good Adherences. ART Adherence is higher in female patients 1852(97%) than male 1350 (95.7%). From 3321 patient at the first visit 1962(62%) of patients had severe immunodeficiency and also1725 (52%) were WHO III stage after 6 month of ART the immune status was improved and WHO staging was reclassified and majority of patients were improved. The highest proportion of cases was seen in Bahir Dar town 633/1000 followed by West Gojjam159/1000pop

**Conclusion and Recommendation:** HIV/AIDS cases have decreased from year to years. Even if incidence rate of HIV/AIDS was decreases the burden of HIV/AIDS still increases. TB-HIV

co infection is critical problem which need give attention in screening program; TB Screening is not addressed it would be questioned and investigation to address the gaps, physicians should consistently screening HIV patient for TB. After starting of ART in the first 6 month of treatment strict follow up and registered ever follow up stage ; identify either they are improve or not.The reporting format should including important variable like Opportunistic infection. As we know nutritional intervention is the integrated part of HIV/AIDS management so we must registered and record properly patient weight and height to calculate BMI and follow up stage.

## Complied Body Works

### Introduction

HIV/AIDS has been documented as one of the major public health challenges in the world[1].HIV stands for human immunodeficiency virus, If left untreated, HIV can lead to the disease AIDS (acquired immunodeficiency syndrome)(1). Unlike some other viruses, the human body can‟t get rid of HIV completely. So once you have HIV, you have it for life. HIV attacks the body‟s immune system, specifically the CD4 cells (T cells), which help the immune system fight off infections. If left untreated, HIV reduces the number of CD4 cells (T cells) in the body, making the person more likely to get infections or infection-related cancers (2). According to the World Health Organization (WHO), there were approximately 36.9 million people worldwide living with HIV/AIDS at the end of 2014. Of these, 2.6 million were children (<15 years old).According to WHO, an estimated 2.0 million individuals worldwide became newly infected with HIV in 2014. This includes over 220,000 children (<15 years). Most of these children live in sub-Saharan Africa and were infected by their HIV-positive mothers during pregnancy, childbirth or breastfeeding. The vast majority of people living with HIV are in low- and middle-income countries. According to WHO, an estimated 34 million people have died from AIDS-related causes so far, including 1.2 million in 2014.According to UNAIDS in June 2015, 15.8 million people living with HIV were accessing antiretroviral therapy (ART) globally, up from 13.6 million in June 2014 (3).

Sub-Saharan Africa has the most serious HIV and AIDS epidemic in the world. In 2013, an estimated 24.7 million people were living with HIV, accounting for 71% of the global total. In the same year, there were an estimated 1.5 million new HIV infections and 1.1 million AIDS-related deaths. HIV prevalence for the region is 4.7% but varies greatly between regions within sub-Saharan Africa 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 (4). Over the past decade, antiretroviral treatment programs have been scaled up dramatically in sub-Saharan Africa. In 2012, 68% of people living with HIV in sub-Saharan Africa had access to antiretroviral treatment under the World Health Organizations (WHO) 2010 guidelines (those with a CD4 count of 350 or less).40 However, the WHO‟s 2013 guidelines

have subsequently made many more people eligible for treatment by expanding treatment initiation to those with a CD4 count of 500 or less, reducing ART coverage to 39% in 2013 (5).

Generally every country has its own future when it comes to Africa; the focus towards successful fight against HIV/AIDS requires a concerted effort. The poverty that engulfs most of the African countries, the problems of unstable governance, the wars that have become a common phenomenon across the continent over the past decade (The case of Uganda, DR Congo, Rwanda, The Sudan, Ethiopia, Eritrea, Somalia, Liberia, Ivory coast to single out a few nations), unemployment, rural-urban migration, cheap seasonal labor, traditional and cultural beliefs all need to be addressed across the continent while addressing the issue of the pandemic (6).

Ethiopia is one of the sub-Sahara African countries shared the burden of HIV epidemics7.HIV surveillance has been the cornerstone of national efforts to monitor the spread of HIV infection in Ethiopian and to target HIV-prevention programs and health care services (7). HIV infections were first found in Ethiopia in 1984, one to two years later than in most other Sub-Saharan countries but its main features resemble those elsewhere in Eastern Africa: the relatively virulent HIV-1 is the major strain of the virus in Ethiopia, transmission is largely through heterosexual contact and to a lesser extent to mother-to child transmission, and the highest prevalence of infection is in the 20-39 age group, with higher rates in females than males in the younger age groups. Genetic diversification studies of the Ethiopian HIV-1 subtype C virus confirm its introduction in the early 1980s (8). First AIDS cases reported in 1986.In 1987, the government established an HIV/AIDS department within the ministry of Health, and in 1988, an HIV surveillance system was established. In 1989, the health bureau of the Addis Ababa city Administration began HIV sentinel surveillance (9). According to the 2014 HIV estimates, the national HIV prevalence in Ethiopia is 1.14%, indicating the country has more than achieved the Millennium Development Goal 6 target of 2.5%. Annual new HIV infections have also declined by 90% and AIDS-related deaths by 53% in the last decade (between 2000 and 2011). Across all the regions, urban areas are more affected than rural ones, and females are more affected than males by the HIV epidemic. The 2014 estimated number of people living with HIV (PLHIV) was 769 600 with 15 700 new HIV infections and 35 600 AIDS-related deaths (11).Amhara region has the second largest number of HIV infected persons in Ethiopia (11).Poor socio-economic conditions have fueled seasonal migration of adult males from Northwestern Ethiopia. Around 200,000 - 300,000 migrants leave home annually to find seasonal farm work in Metema, Quara,

and West Armacheho Districts, returning home in three- to six-month intervals (12). Migrant laborers experience a high prevalence of HIV and sexually transmitted infections (STIs) and a low level of condom use (13).

**Study Rationale**

Surveillance data analysis is a key function for, monitoring disease trends and evaluating the effectiveness of disease control programs and policies. Results from data analysis can trigger public health action when incidence of diseases increasing. This is important to figure out the magnitude and severity of the disease in Region. It also enables to evaluate the effectiveness of the efforts mitigated to halt the burden of HIV infection. Besides, the data will help public health officials and program managers to set priorities for future prevention and control of the disease. This analysis also uses to describe the outcome ART. Moreover, the analysis could identify problems encountered during data collection, feeling reporting formats and figure out missed important variables that kindly used to take corrective actions. Regular data analysis and timely feedback could inform and motivate health care providers to produce high quality of data.

**Objectives**

**General Objective**

To analyze five (2010-2014) data of HIV and describe trends of morbidity and mortality of diseases in Feleg Hiwot Referral Hospital ART center, Bahir Dar, Amhara Region, 2010-2014

**Specific Objectives**

- To describe the trend of HIV/AIDS in the past 5 years
- To describe WHO stage & CD4 level
- To describe the distribution of HIV/AIDS by person, time, place
- To describe ART Adherence
- To describe ART eligibility criteria
- To estimates TB/HIV co-infection

## Methodology and Materials

### Study area

The study was carried out at Felege Hiwot Referral Hospital in Bahr Dar Ethiopia, the capital city of Amhara Regional State situated 565 Km Northwest of Addis Ababa. It was the only Referral Hospital in the town. The Hospital was built in 1983 to serve about 25,000 people but now it is serving more than 6 million people. A total of 9024 adult HIV/AIDS patients have been enrolled to HIV/AIDS chronic care in Felege Hiwot Referral Hospital, of which 2443 were in pre-ART care, and 6581 were on ART care.

**Study period:** Secondary data of HIV for the past Five years (2010-2004 E.C) were collected, analyzed and interpreted from July 15 to August 28/2015.

**Study Design:** Institutional based Descriptive cross sectional study design was used

**Source and Study Population:** The source populations were the total cohort of HIV/AIDS patients who were enrolled to ART care clinic in Felege Hiwot referral Hospital and the study populations were all new HIV-positive patients whether they are actively taking ARV drugs, and/or those who followed HIV/AIDS chronic care but not yet started ART.

**Data source:** Data were obtained from ART center in Felege Hiwot Referral Hospital, Bahir Dar by reviewing patient registration book.

**Data collection procedure :** Data was collected 5 years surveillance data from ART center on daily registration of new cases in Data Base Management system (DMS) and check data completeness for each Variable, recoding.

**Data Analysis procedure:** The collected data was analyzed by using Microsoft Excel 2007 & Epi-info version 7 in respect to important variables.

**Ethical issue:** Letter was written from Amhara regional health bureau to Felege Hiwot Referral Hospital for legal consent to use the data and confidentiality was maintained.

### Definition of terms

**A case of HIV infection: -**

An individual with HIV infection irrespective of clinical stage (including severe or stage 4 clinical diseases, also known as AIDS) confirmed by laboratory

**WHO clinical staging**

| WHO clinical stage | HIV associated symptoms |
|---|---|
| I | **Asymptomatic:-** persistent generalized lymphadenopathy |
| II | **Mild symptoms:-** Moderate unexplained weight loss (>5 &< 10%of presumed), recurrent upper respiratory tract infections, herpes zoster, Angular cheilitis, recurrent oral ulceration, etc… |
| III | **Advanced symptoms:-** Unexplained severe weight loss (>10% of presumed), unexplained chronic diarrhea > 1 month, unexplained persistent fever, persistent oral candidacies, pulmonary tuberculosis, severe bacterial infections, unexplained anemia etc. …. |
| **IV** | **Severe symptoms:-** HIV wasting syndrome, pneumocystis pneumonia, chronic herpes simplex infection , esophageal candidiasis, extrapulumonary tuberculosis, Kaposi sarcoma, central nervous system toxoplasmosis, HIV encephalopathy, etc…. |

**Functional status for patient**

**W: -** Working

**A: -** Ambulatory

**B: -** Bedridden

**% weight gain/loss on ART**

After starting ART use, the weight on the day ART was started to compare the current weight. It is useful to follow either weight gain or weight loss in the first year to see their response to ART.

% weight gain on ART=new weight – weight when ART started/weight when ART started

**Adherence**

Adherence percentage missed doses:

| Adherence | % | Of 30 doses | Of 60 doses |
|---|---|---|---|
| G (Good) | > 95 % | <=2 doses | <= 3 doses |
| F (fair) | 85 – 94 % | 3 – 5 doses | 3 – 9 doses |
| P(poor) | < 85 % | >=6 doses | > 9 doses |

**Patient status**

**To: -** Transferred out

**Dead: -** No longer live

**Drop: -** Last to follow up for > 3 month

**on treatment: -** Currently taking the ART drug

**Restart: -** To start again ART after stopping

**Lost: -** Not to seen since >= 1 month

**TI: -** Transferred in (where ART started)

**Eligibility** – Reasons why patient eligible for ART

**1** – Clinically (WHO staging)

**2** – CD4 count

**3.** Transfer in

**4.**Pregnancy

**WHO immunological classification for established HIV infection**

| HIV - associated immunodeficiency | **Age – related CD4 values** | | | |
|---|---|---|---|---|
| | <11 months (absolute no per $mm^3$) or CD4 % | 12 -35 months (absolute no per $mm^3$) or CD4 % | 36 -59 months (absolute no per $mm^3$) or CD4 % | > 5 years Absolute no |
| Non or not significant | > 1544<br>> 35 % | | > 721<br>>25 % | > 500 |
| Mild | 1323 – 1544<br>30-35 % | 721-1000<br>25-30 % | 454-721<br>20-25 % | 350-499 |
| Advanced | 721-1499<br>25-29 % | 454 – 692<br>20-24 % | 341-432<br>15-19 % | 200-349 |
| Severe | < 721<br>< 25 % | < 454<br><20 % | < 341<br><15 % | < 200 |

**Results**

From 3321 patient 40 (1.2%) of were dead, 55(1.6%) restart their treatment and 91(2.7%) patients were transferred out to other health facilities. Majority of patients 3120 (94%) were on treatment.

**Table 12:** Summary of patient Status in HIV/AIDS patients in Felege Hiwot Referral Hospital, Bahir dar, Amhara Region, Ethiopian, 2010-2014

| Patient Status | Frequency | Percent |
|---|---|---|
| DEAD | 40 | 1.20% |
| DROP | 1 | 0.03% |
| LOST | 2 | 0.06% |
| On Treatment | 3120 | 93.95% |
| RESTART | 55 | 1.66% |
| STOP | 1 | 0.03% |
| TI | 10 | 0.30% |
| TO | 91 | 2.74% |
| Unknown | 1 | 0.03% |
| TOTAL | 3321 | 100.00% |

According to Sex wise distribution, in all age groups, Morbidity is higher in females 1119 (58%) than the males 1410 (42%) but on the reverse from the total number of death 40, the mortality was higher in males 21 (58%) and the lowest in females 19 (42%).

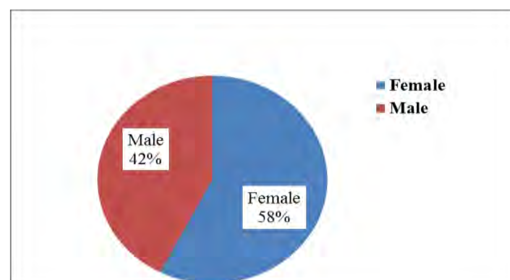


**Figure 11**: Sex proportion HIV cases in Felege Hiwot Referral Hospital, BahirDar, Amhara Region, Ethiopian, and 2010-2014

The median age of the patients is 30 years ranging from 1month to 75 years and majority of cases belongs to the age group great than 15 years 3321 (91.9%). It is relatively small in children less than 5 years 114(3.4%) of the cases are under 5 children

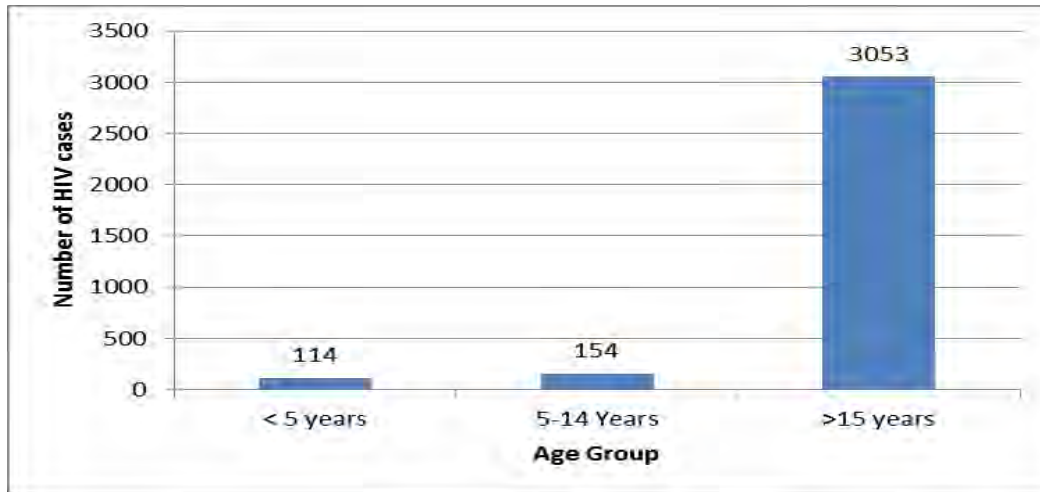


**Figure 12:** Age distribution of HIV patients in Felege Hiwot Referral Hospital, Bahir dar, Amhara region, Ethiopian, 2010 to 2014

The morbidity due to HIV is higher in the age categories great than 15 years (19/1000) and lower in children aged 5-14years (7/1000). When we come to Age specific mortality (ASM), ASM were higher in < 5 years of age 26/1000 and lower in 5-14 years" children 6/1000.

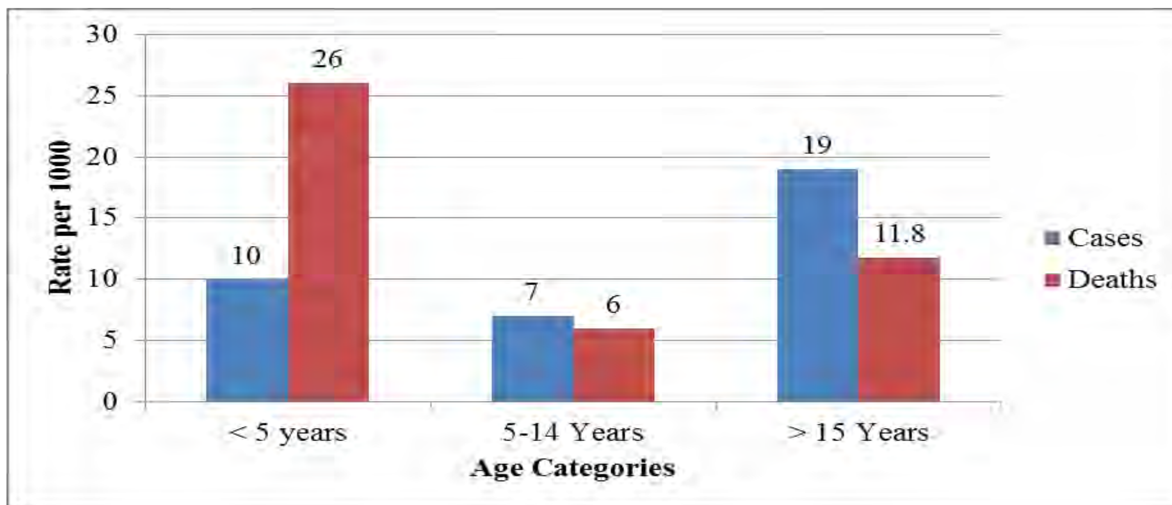


**Figure 13:** HIV patient"s age specific mortality and morbidity in Felege Hiwot Referral Hospital, Bahir dar, Amhara region, Ethiopia, 2010 to 2014

A total Number of 3321 HIV cases were reported in the past 5 years (2010-2014) from ART center. The majority 2760 (83%) cases were Eligible for ART by CD4 count followed by 555 (16.7%) are Eligible by Clinically (WHO staging).

**Table 13:** Eligibility criteria for ART in Felege Hiwot referral Hospital, Bahir dar, Amhara Region, Ethiopian, 2010 – 2014

| Patient Reason Medically Eligible For ART | Frequency | Percent |
|---|---|---|
| Clinically (WHO staging) | 555 | 16.72% |
| CD4 count | 2760 | 83.13% |
| Transfer in | 1 | 0.03% |
| Pregnancy | 4 | 0.12% |
| Total | 3320 | 100.00% |

Concerning adherence from the total cases; 67 (2%) are Poor Adherences and the majority of patient 3202 (96.42%) are Good Adherences. ART Adherence is higher in female patients 1852(97%) than male 1350 (95.7%)

**Table 14:** Sex distribution of ART Adherence in Felege Hiwot Referral Hospital, Bahir dar, Amhara region, Ethiopian, 2010-2014

| **Patient ART Adherence** | **Total** | **Female** | **Male** |
|---|---|---|---|
| **Fair** | 4(0.12%) | 1 | 3 |
| **Good** | 3202(96.4%) | 1852 | 1350 |
| **Poor** | 67(25%) | 36 | 31 |
| **Unknown** | 48(0.001%) | 22 | 26 |
| **Total** | 3321 | 1911 | 1410 |

A total of 3321 new HIV/AIDS cases and 40 deaths reported respectively from year 2010-2014. Form the above estimation the average case was 664 (20%); the range between 426 and 886 cases, and standard deviation (SD) of 181.The standard error of the mean was 80.9 and 95% CI 438-889. The trend of HIV/AIDS decrease from year to year. The highest proportion (26.6/100) in 2010 and the lowest 12.8/100 in 2014, we seen this almost it decrease by half, this may be due to increases awareness of community about HIV/AIDS and the most significant one is the ART drug treatment.

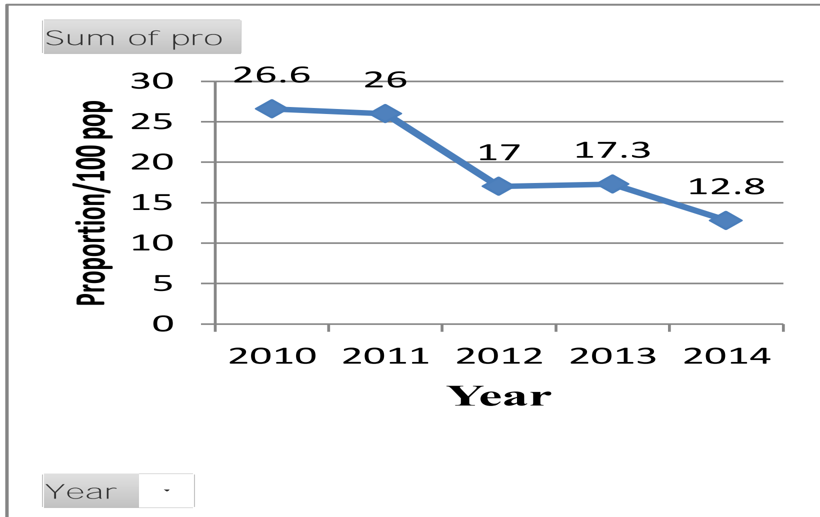


**Figure 14:** Proportion of HIV Cases in Felege Hiwot Referral Hospital, Bahir dar, Amhara Region, Ethiopian 2010-2014

After six month of ART 1519 (46%) patients have gain weight, 430(13%) patients have lost weight, 606 ( 18%) patients have the same weigh as before,763(23%) were missed because of some reason like their weight was not measured or their measured weight was not registered.

**Figure 15:** Proportion of weight Status of HIV cases in Felege Hiwot Referral Hospital, Bahir Dar, Amhara Region, Ethiopian, 2010-2014

When we see the immunological status of the patients we can determine immune status reflected by CD4, respond to ART is affected by the immune stage at which it started. So from 3321 patients at the first visit 1962(62%) of patients were severe immunodeficiency, 948 (28%) of patients were Advanced immunodeficiency and 232 (7%) mild immunodeficiency. After 6 month of ART the immune status was improved. Therefore, the severity of immunodeficiency decreased (see figure 18).

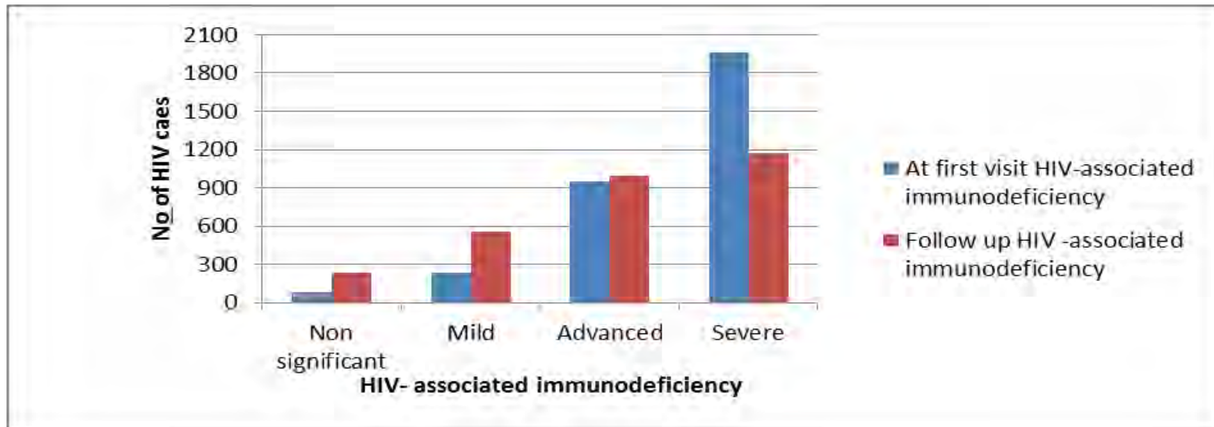


**Figure 16:** At First visit of ART and follow up ART HIV associated immunodeficiency in Felege Hiwot Referral Hospital, Bahir dar, Amhara region, Ethiopian, 2010-2014

WHO Clinical Staging of HIV for children and adults with confirmed HIV infection is one of the basic criteria to start ART. There are four WHO clinical staging. At the beginning of ART almost half of the patients 1725 (52%) were WHO III stage, 253 (8%) patient were at WHO IV stage (AIDS Stage).consequently after 6 month of treatment patient WHO staging was reclassified and majority of patient were improved. Detail information on WHO Staging was presented as follow in (see figure 17)

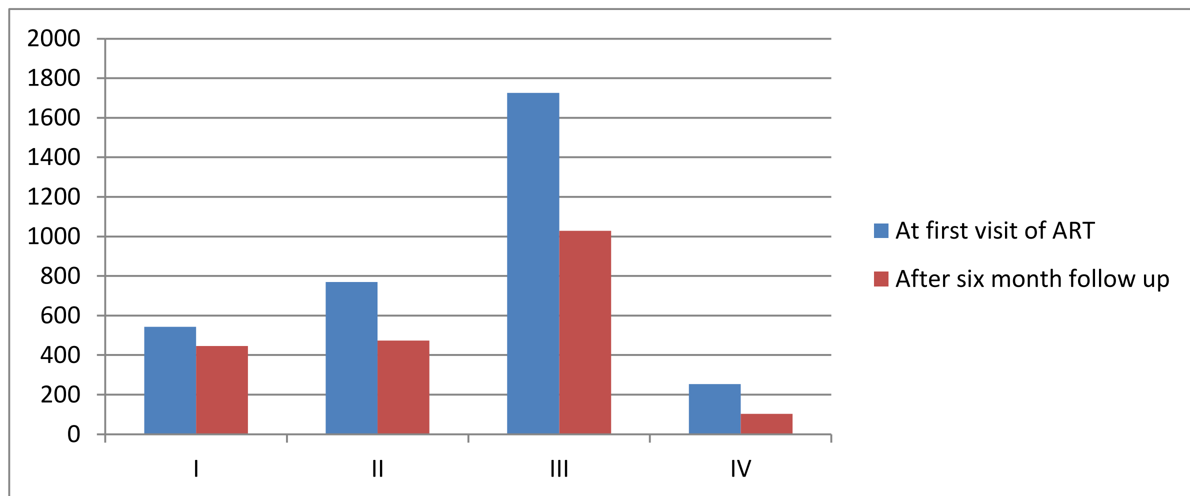


**Figure 17:** First visit of WHO stage and after 6 month Treatment in Felege Hiwot Referral Hospital, Bahir Dar, Amhara Region, Ethiopian, 2010-2014

As we know from ART guidelines all HIV patient need TB screening. Based on this from 3321 of HIV patients 1955(59%) were screened for TB, the rest were unknown 1366(41%) whether they were screened but not registered or they were not screened at all. From screened HIV

patients 1955, 1920(58%) were Negative, 35(1%) were Positive. Therefore, the result was doubtful, it weavers between the reason that they were not screened at all or they were screened but not registered in the screening list.

**Table 15:** proportion of TB screening of HIV patients in Felege Hiwot Referral Hospital, Bahir dar, Amhara Region, Ethiopian 2010-2014

| Patient TB Screening | Frequency | Percent (%) |
|---|---|---|
| Negative | 1920 | 57.8% |
| Positive | 35 | 1% |
| Unknown | 1366 | 41.2% |
| Total | 3321 | 100% |

Three thousand three hundred twenty one cases were distributed to different zones of the region in the respective year. People come from different zone for ART, even if they had the treatment in their area because of different reason. Therefore the highest proportion of cases was seen in Bahir Dar town 633/1000 and the lowest cases were in North Gonder almost 8/1000 in the past five years.

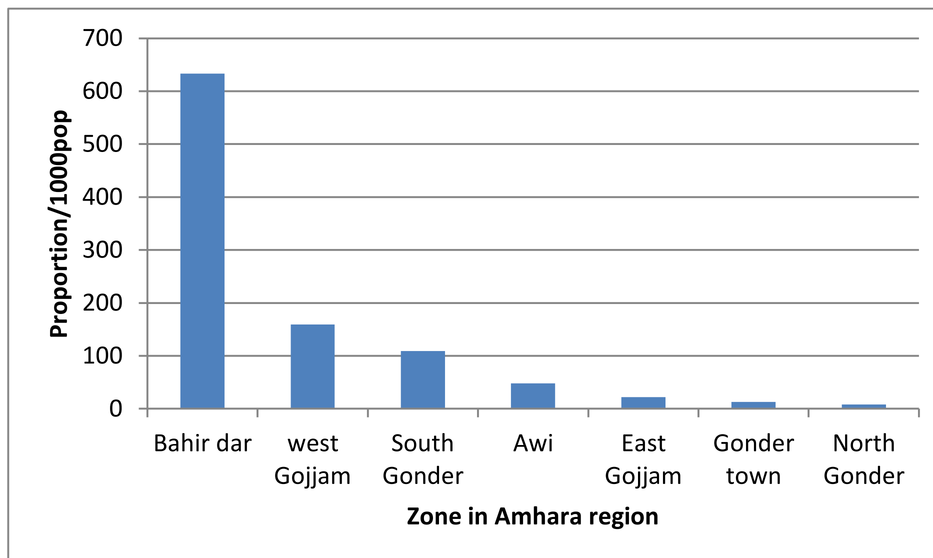


**Figure 18:** Proportion of HIV cases by Zones in Felege Hiwot Hospital, Bahir dar, Amhara Region, Ethiopian, 2010-2014

**Discussion**

In this study, the majority of patient 3120 (94%) were on treatment and only 40 (1.2%) were dead. This result indicates that after antiretroviral treatment (ART) is decrease the patients total burden of HIV, maintain function of immunity and prevent opportunistic infection that often lead to death. On its introduction in 1996, antiretroviral therapy (ART) offered HIV positive individual‟s tremendous life-sustaining benefits and is most likely the single most dramatic development yet in the treatment of HIV (14). In general, ART improves the quality and length of life and decreases death of people living with living HIV. According to UNIAIDS/WHO, update data the number of AIDS – related deaths has declined by over 10 % over the past five years due to ART (15).

In January 2005, free ART through the Global Fund, World Bank, and US President‟s Emergency Plan for AIDS Relief (PEPFAR) became available in 22 hospitals (16).Since 2005 the availability of free ART program contribute major role for decreasing new HIV infection and also decline in HIV/AIDS related death (7). when we come to in this finding the trend of new HIV infection or incidence have been reduced over the past 5 years there were 886 new infection in 2010, 866 in 2011, 567 in 2012, 576 in 2013, 426 in 2014.This result goes to similar with the results reported in Morbidity and Mortality weekly report said that the scale up of ART since 2005 has contributed to declines of about 30% in global annual number of HIV related death and decline in global HIV incidence (15). On the reverses tin Uganda since 2006 the percentage of new HIV infection increased from 6% to average of 7.2% according to UNAIDS (16). Generally ART is saved the life of many HIV/AIDS patient and also prevents new HIV infection (reduced the risk of HIV transmission by up to (96%) (17).

Morbidity due to HIV/AIDS was higher in females 1119(58%) than males 1410(42%) Similar finding was indicated in a study that almost 80% (19.2 million) of the 38.6 million adults living with HIV/AIDS globally are women (18). In Sub-Saharan Africa, where gender dimension of the virus is more apparent, 61 percent of people living with HIV/AIDS in 2007 were women. In some countries within the Sub-Saharan region, the sex ratios of new HIV infections are even more disproportionate where women and girls take the lion‟s share of new infections (19). In studies undertaken in India, Mexico and USA women much more than men had to shoulder the burden of providing care to household members suffering from AIDS- related illness, this may indicate that women‟s were higher than man in HIV/AIDS infection (19). Women are at a greater

physiological risk of contracting HIV than men. This is in part because women have a greater mucosal surface area exposed to pathogens and infectious fluid for longer periods during sexual intercourse and are likely to face increased tissue injury. Young women are at particularly high risk due to cervical ectopic which facilitates greater exposure of target cells to trauma and pathogens in the vagina (20). But on the reverse Mortality was higher in male 1119(58%) than in female 1410(42%).similar study in Kenya males accounted for 56.2% of all HIV/AIDS death with mortality rates of 15.2% per 1000 per years for males and 11.8 per 1000 per year for female. The other study in Tanzania showed males to have higher mortality rate than female this finding is similar to other studies in Africa which showed mortality rate to be higher in males than females this may be due to late reporting of men to care and treatment clinics and poor adherence to treatment are among the reasons identified by various studies suggested that female patient tend to know their HIV status and start ART early with better CD4 cell count compare to males (21).

Tuberculosis (TB) is a leading cause of morbidity and mortality in people living with HIV, including those on antiretroviral therapy (22). But in this finding from3321 of HIV/AIDS patient were screened for TB 1955(59%), 1366(41%) were not screened for TB the reason that they were not screened is not well-known may be they are not screened at all or they were screened but not registered in register book, based on these find we can‟t decide at all, but from 1955(59%) TB screened HIV patient almost half of the patient were Negative 1920(58%) these may indicate that the burden of TB according to WHO HIV infection with M. tuberculosis is low. On the contrary another studies also mentioned that rapid spread of HIV could lead to increasing burden TB. A study done in Dare Salam Tanzania prevalence of Tuberculosis among HIV patients was 20.2% of tuberculosis compared to those individuals who were negative for HIV (3.2%) (23). similarly our finding is not consistent with another study done in the other parts of Ethiopia where the prevalence of Tuberculosis was 20.9% (24).

Antiretroviral Adherence is the second strongest predication of progression to AIDS and Death after CD4 count. The average rate of adherence to ART is approximately 70% (25). In these findings with in past 5 years (2010-2014) there were 96.4% patients have Good Adherences; it was above the average Adherence rate. Many studies mentioned that Adherence in developing countries has been found to be at least as good as Adherence in developed countries. In a 48-week study of 289 poor South Africans attending a public hospital HIV clinic and receiving

ART, average adherences measured by clinic based pill counts and pharmacy refill data was 87.2% (26). In study of 34 self-report paying patients at a clinic in Uganda who were followed for 90 days after initiating ART, average adherence as measured by 30 day self-report 91.6% (27).A cross sectional study assessed self-reported Adherence in 109 patient receiving ART in 3 private clinics in Botswana, in this cohort 54% of the patient had >= 95% Adherence percentage again within the range of that described in developed world (28).

**Limitation**

- Incomplete registration and documentation of findings like for instance TB screening is not complete and also follow up states of the patients WHO stage , Functional states , CD4 level were not competed.
- There is no opportunistic infection (OI) registration system in database.
- We can"t calculate BMI to know the nutritional status of the patient either they are malnutrition or not to take intervention this limitation because of the patient height is not registered and recorded so that we can"t calculate BMI.

**Conclusion**

HIV/AIDS cases have decreased from year to years. The highest number of HIV/AIDS cases reported in 2010 and also the majority of HIV/AIDS cases reported from Bahir Dar. Even if incidence rate of HIV/AIDS was decreases the burden of HIV/AIDS still increases. Morbidity is higher in females; on the reveres Mortality is higher in male than female. TB-HIV co infection is critical problem which need give attention in screening program; the physicians should consistently screening patient for TB because as we know TB-HIV co infection is high stated as in many studies and researches. Generally after ART treatment of 6 months the immune status expressed by CD4 level, WHO stage were improved and also the have weight gain.

**Recommendation**

- Feleg Hiwot Referral Hospital improving registration and documentation consistently.
- Amhara regional Health Bureau, Felege Hiwot Referral Hospital and other health's partners monitor data entered & managed properly with the respective variable.
- Ongoing Data analysis should be done to monitor the disease trend and effectiveness of control program
- The reporting format should including important variable like Opportunistic Infection(OI)

## Complied Body Works

- After starting of ART in the first 6 month of treatment strict follow up and registered ever follow up stage ; identify either they are improve or not.
- The available data should be checked with regional bureau and support partners to have consistent and reliable data.
- OI must include in Databases systems to identify which OI is more seen and in which age group were vulnerable.
- TB screening should be integrated part of TB-HIV co infection prevention management TB Screening is not addressed it would be questioned and investigation to address the gaps.
- As we know nutritional intervention is the integrated part of HIV/AIDS management so we must registered and record properly patient weight and height to calculate BMI and follow up stage.

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## Chapter III – Evaluation of Surveillance System

### Malaria and severe acute Malnutrition surveillance Evaluation system in East Gojjam Zone, Amhara Regional State 2015

**Abstract**

**Back ground:** Surveillance system evaluation is a tool for monitoring surveillance activities. Malaria is one of public health important and communicable disease, which is under surveillance activities and poses major public health problem in the region. Regardless of achieving the high coverage of the major interventions for malaria control like high distribution LLITNs, increasing of health facilities that may be facilitated on time and accurate diagnosis however in the country; malaria remains still the leading causes of morbidity and mortality in all ages group. On the other hand, a number of Woredas in our country were affected by the shortage of rain which lead to severe drought will further aggravate the already existing poor nutritional status of the most vulnerable group mainly children, pregnant and lactating women .In East Gojjam Zone in Amhara region 8 nutritional hotspot woreda were selected from these 3 woredas were priority one hotspot woredas.

**Method**: Cross-sectional descriptive study was conducted during this evaluation in East Gojjam Zone, Amhara region. This evaluation of the surveillance system employed on selected priority disease Malaria and SAM (Severe acute malnutrition). Data on attributes of the surveillance system (usefulness of the surveillance system, simplicity of the system, flexibility, quality of the data, acceptability, representativeness, timeliness, and stability of the surveillance system) at different level was collected during the assessment. The zonal health department, Six health centers, Six health posts and three district health offices, totally 15 health offices/facilities were included in this evaluation. Data was entered in to Microsoft Excel and checked for its Quality then analysis was done using Epi-info version 7

**Results:** At Zonal level there was an assigned PHEM officer, but in all woredas, there was no assigned public health expert for the PHEM only, rather one expert who has another primary responsibility do the PHEM activities. Malaria in East Gojjam A total of 147,045 outpatient and inpatient cases of confirmed malaria cases and three deaths were reported in 2007 EFY. From week 1-52(January- December 2015) a total of 39,038 cases of clinical and confirmed malaria were reported, 22504 Cases positive for Plasmodium falciparum and 16,789 were positive for plasmodium vivax. Sever acute malnutrition in East Gojjam, a total of SAM cases from WHO

week 42-10, 2015/2016(October – February) were some discrepancy between PHEM weekly report and weekly Emergency Nutrition report. According to standards that are previously stated the PHEM weekly report and weekly Emergency Nutrition report should be the same.

There were outbreaks of Measles in five districts Bibugn (5/7/2007 E.C), Goncha siso (21/5/2007 E.C) Hulet eju (2/7/2007 E.C), Sinan (2/6/2007 E.C), Shebel Berenta (19/3/2008 E.C). Scabies in seven district including visited districts and Severe Acute Malnutrition in eight districts including visited districts .The cases definition of severe acute Malnutrition (SAM) and Malaria only available in 2 visited health facilities. Shortage of weekly PHEM reporting formats was observed in 1 district, 2 health centers and 1 health post and all visited zonal, district and health facility respondents agreed that case definitions of selected diseases are easy and applicable for case detection by all level professionals, further as the current reporting format contains additional spaces at the end for both weekly and immediately reportable diseases with namely; others. In all visited districts and health facilities except in health post reported format were complete and clearly filled. In 2015 PHEM weekly reporting rate was 99% for East Gojjam zone PEHM health department. Of all facilities privates are less likely to send weekly PHEM report. The weekly report timeliness in the zone in the previous fiscal year (2015) was 99% and the timeliness of Enarji Enawuga, Enbise Saremder and Shebel Berenta was 95%, 94 % and 90% respectively.

**Conclusion:** In East Gojjam zone the surveillance system was not satisfactory and the trend of supervision and feedback was not good at Zonal and district levels, accordingly efforts should be exerted to improve the system. It was identified that training of surveillance is required for health workers specially health extension workers since they are not trained. Following this, poor data management was observed at this level during the assessment. Regular monitoring and follow up of health extension workers from districts and zonal PHEM unit is very weak. Lastly we concluded that supportive supervision periodic feedback should be conducted.

## Complied Body Works

### Introduction

Public health surveillance is the ongoing systematic collection, analysis, interpretation and dissemination of heath data. The mechanism that public health agencies use surveillance data to describe and monitor health events in their jurisdictions, set priorities and to assist in the planning, implementation, evaluation of public health intervention and program besides use monitors the health of their communities (1).Even though the need for effective surveillance has long been recognized, there is increasing international pressure to improve the effectiveness of those even further (2). The capacity of surveillance systems to accurately describe patterns of diseases is of public health importance. Therefore, regular and relevant evaluations of these systems are critical in order to improve their performance and efficiency (3). Conducting surveillance system is crucial for monitoring efficacy and effectiveness of interventional programs in health care system. Effective communicable disease surveillance systems are one of the basic strategies of the national disease prevention and control program. A communicable disease surveillance system serves for two key functions; early warning of potential threats to public health and program monitoring functions which may be disease specific or multi-disease in nature (4).

Disease surveillance is essential for early detection of outbreaks, epidemics and pandemics in order to initiate timely response and also it is essential to evaluate or monitor progress of ongoing interventions targeted for disease reduction. A well-functioning disease surveillance system is critical to measures the burden of a disease (health-related event), identification of populations at high risk and the identification of new or emerging health concerns to the health system, in providing evidence-based information for planning, implementation, monitoring trends in the burden of a disease and evaluation of public health intervention programs to prevent and control disease, injury, or adverse exposure, evaluate program performance, prioritize the allocation of health resources, describe the clinical course of disease; and stimulate for epidemiologic research (5).Objectives of surveillance is to detect epidemics/outbreaks so that they can be controlled in a timely manner, to predict epidemics so that health services can plan to respond, prevent where possible, treat and control priority diseases, to monitor trends of priority diseases in order that changing trends inform policy decision and to evaluate an intervention so that effective and efficient actions/policies are identified and supported (6).

## Complied Body Works

Ethiopia had introduced Integrated Disease Surveillance (IDS) in 1996, focusing on 17 priority communicable diseases. Two years later, in 1998, the 48th WHO Regional committee for Africa adopted a resolution on integrated disease surveillance of communicable diseases. It is aimed to assist health workers to detect and respond to diseases of epidemic potential, diseases of public health importance, and diseases targeted for eradication and/or elimination through the available effective control and prevention interventions. Recognizing and addressing the problem of vertical disease surveillance systems, member states adopted In Ethiopia 20 diseases (13 are immediately reportable whereas 7 are weekly reportable and (Integrated Diseases Surveillance and Response (IDSR) as a regional strategy for early detection and effective response to priority communicable diseases in the African region (7). Recently federal ministry of health (FMOH) underwent the process reengineering, identifying the IDSR to be the core process to be evaluated. The IDSR was evaluated and identifying its strength and weakness, was recommended to establish Public Health Emergency Management (PHEM) as of 2009. One of the major activities of PHEM is to take over the diseases surveillance parallel to preparedness, response and rehabilitation in any health related emergencies and outbreaks.1weekly reportable diseases was added in Amhara Region (Leishmaniasis) are selected to be included into the routine surveillance (6).

**List of reportable diseases/conditions in Ethiopia**

| **Immediately Reportable Diseases** | **Weekly Reportable Diseases** |
|---|---|
| 1.Acute Flaccid Paralysis (AFP) Polio | 14.Dysentery |
| 2.Anthrax | 15. Malaria |
| 3.Avian Human Influenza | 16. Meningococcal Meningitis |
| 4.Cholera | 17. Relapsing Fever |
| 5.Dracunculiasis (guinea Worm) | 18. Severe Malnutrition |
| 6.Measles | 19. Typhoid fever |
| 7.NNT | 20. Typhus |
| 8.Pandemic Influenza A | 21.Leishmaniasis |
| 9.Rabies | 22.Maternal Death |
| 10.Smallpox | |
| 11.SARS | |
| 12.VHF | |
| 13.Yellow Fever | |
| 14.Any unusual event | |

## Complied Body Works

These diseases and conditions are selected based on one or more of the following criteria:-

- ✓ Diseases which have high epidemic potential (anthrax, avian human influenza, cholera, measles, meningococcal meningitis, pandemic influenza, smallpox, severe acute respiratory syndrome (SARS), viral hemorrhagic fever (VHF), and yellow fever),
- ✓ Required internationally under IHR2005 (smallpox, poliomyelitis due to wild-type poliovirus, human influenza caused by a new subtype, SARS),
- ✓ Diseases targeted for eradication or elimination (poliomyelitis due to wild-type poliovirus, Dracunculiasis, neonatal tetanus (NNT),
- ✓ Diseases which have a significant public health importance (rabies, dysentery, malaria, relapsing fever, typhoid fever, typhus and severe malnutrition);
- ✓ Diseases that have available effective control and prevention measures for addressing the public health problem they pose (6).

**Study Rational**

Surveillance system evaluation is a tool for monitoring surveillance activities; disseminate feedbacks and inputs for improvement of intervention programs. Enhancing this evaluation is very important to control diseases mainly those has public health importance. Malaria is one of public health important and communicable disease, which is under surveillance activities and poses major public health problem in the region. In Amhara region 80% of the land is malarious and 75 %( 14.284, 547) of population is in risk of Malaria. Regardless of achieving the high coverage of the major interventions for malaria control like high distribution LLTNs, increasing of health facilities that may be facilitated on time and accurate diagnosis however in the country; malaria remains still the leading causes of morbidity and mortality in all ages group. In a country with a weak health information system, the few data which are available are often unreliable and also the completeness of this report, though, is questionable.

In 2015/2016, the existing of Amhara population has been affected by different types of hazards including EI-Nino, the El-Nino effect will be manifested with shortage of rain. A number of Woredas in our country were affected by the shortage of rain which lead to severe drought will further aggravate the already existing poor nutritional status of the most vulnerable group mainly children, pregnant and lactating women .In East Gojjam Zone in Amhara region 8 nutritional hotspot woreda were selected from these 3 woredas were priority one hotspot woredas. (See table 16)

**Table 16:** Hotspot woreda, kebeles, population in east Gojjam Zone, Amhara region, Ethiopian, 2016

| Hotspot woreda | Rank | Total kebeles (#) | Hotspot Kebeles (#) | Hotspot Kebeles pop # |
|---|---|---|---|---|
| Enbise Saremder | 1 | 33 | 26 | 113,010 |
| Shebel Berenta | 1 | 19 | 19 | 122,821 |
| Enarji Enawuga | 1 | 25 | 9 | 92,142 |

Severe acute Malnutrition (SAM) is one of weekly reportable public health important diseases in our surveillance system but the number of cases are poorly estimated due to absence of coordinated epidemiologic surveillance, Use of the collected data at the local level as evidence for public health decision making is not well known and it is not known about the effectiveness and efficiency of the system. Generally on this study is intended to evaluate surveillance system in East Gojjam zone mainly focusing on Malaria and prevention and control activities and SAM case report and case managements will be important to understand gaps, suggest possible intervention and also help to improve public health decision making. Additionally, findings of this evaluation may lead decisions and use as an input for strengthening public health surveillance activities.

**Objectives**

**General Objective**

To evaluate the existing surveillance system of malaria and severe acute malnutrition in three districts of East Gojjam zone, Amhara region, 2016**.**

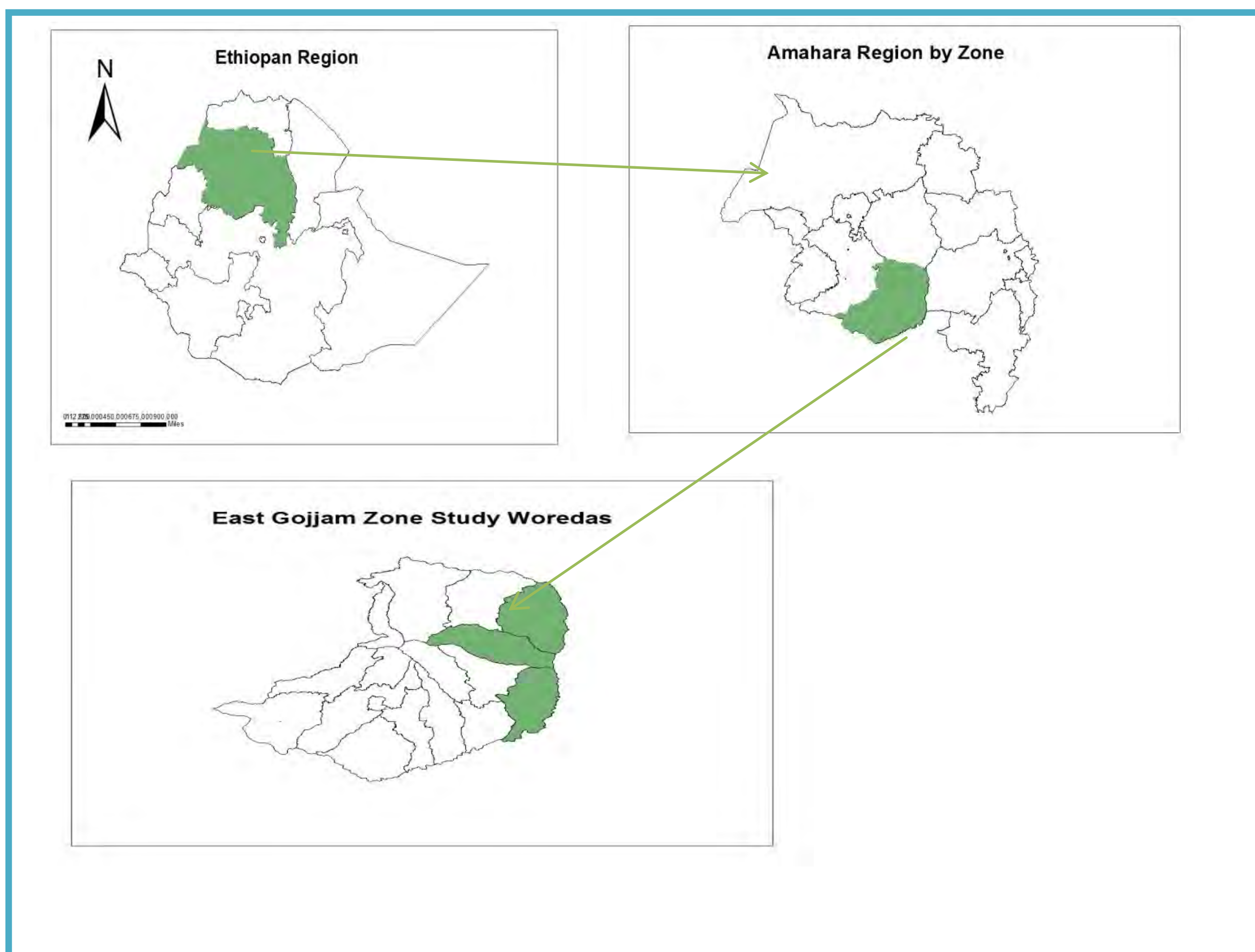
**Specific Objectives**

- ✓ To assess and describe key attributes of the surveillance system mainly on prioritized diseases in East Gojjam zone
- ✓ To assess case detection, reporting analysis and response surveillance system in zone
- ✓ To identify strengths and challenges of the current surveillance system in this zone
- ✓ To understand effectiveness of the system in detecting and management of an outbreak of selected diseases
- ✓ To assess the availability of the resources in a surveillance activities in the zone

**Methods and Materials**

**Study Area**

This surveillance system evaluation was conducted in three districts of East Gojjam zone of Amhara Region (Shebel Berenta, Enbes Saremder, and Enarj Enawuga).East Gojjam is bordered on the south by Oromia region, on the west by Mirab Gojjam, on the north by Debub Gonder, and on the east by Debub Wollo, total population of based 2,539,491 on the 2008 population projection. There are 14 hospital (one Referral Hospital and 13 district hospitals), 100 health centers and 406 health posts. Total health coverage of zone was 100% in 2015.




**Map 3**: Site of surveillance evaluation system, East Gojjam Zone, Amhara, Ethiopia, 2016

## Complied Body Works

**Study period:** The evaluation was carried out from April 15 – 25, 2016

**Study Design**: Cross-sectional descriptive study was conducted during this evaluation in East Gojjam Zone, Amhara region. This evaluation of the surveillance system employed on selected priority disease Malaria and SAM. Data on attributes of the surveillance system (usefulness of the surveillance system, simplicity of the system, flexibility, quality of the data, acceptability, representativeness, timeliness, and stability of the surveillance system) at different level was collected during the assessment.

**Sample Size and Sampling**: From the zone three districts were selected by priority hotspot woredas. This selected woredas are priority one hotspot area in zone and the district health offices were included in the study. Then from each selected district two health centers were selected by convention on their accessibility. From the total health posts under each selected health center, two were selected as above. Finally the zonal health department, Six health centers, Six health posts and three district health offices, totally 15 health offices/facilities were included in this evaluation

**Study Unit**: Surveillance system at zonal level (East Gojjam) was evaluated in detail. Purposively selected districts constituted 16.6 % of the total districts of the zone. Health centers and health posts were others study unit of this assessment.

**Table 17:** Name of visited districts and health facilities East Gojjam zone, Amhara Region, 2016

| S.No. | Name Of district | Name Of health Center | Name of Post |
|---|---|---|---|
| 1 | Enbes Saremder | Deber Medhenit Health center | Deber Medhenit Health post |
| | | Tenta health center | Tenta health Post |
| 2 | Enarji Enawuga | Gedeb Health Center | EnegenaFentargi Health Post |
| | | Enarji Enawuga Health center | Enarji Health Post |
| 3 | Shebel Berehet | Yedwahe Health center | Yedwahe Health Post |
| | | Gedaeyasu Health center | Gedaeyasu Health Post |

**Data Collection Tools and Procedures**

Selection of health facilities was made on a convenience basis taking into consideration time and transport constraints and diseases under surveillance were selected based on the public health importance of the study areas. Two weekly (malaria and Sever acute malnutrition) reportable diseases were considered in the evaluation of the system. Semi-structured questionnaire adopted from CDC and WHO standard questionnaire for surveillance system evaluation was used during data collection at all levels. Regional, Zonal, District and Health Facility PHEM focal persons and other responsible bodies were interviewed with this questionnaire. To confirm responses and ensure quality of the data, observation of documents was done at all levels. Similarly, data at different levels were compared for their consistency.

**Data Analysis**: Data was entered in to Microsoft Excel and checked for its Quality then analysis was done using Epi-info version 7

**Ethical issue:** Letter was written to the district health offices & zonal health department from Amhara regional health bureau for legal consent.

**Result**

**The System at place**

At Zonal level there was an assigned PHEM officer who has full responsibility on public health emergency management. But in most of the woredas, there was no assigned public health expert for the PHEM only, rather one expert who has another primary responsibility do the PHEM activities. On the other hand, flow chart of the surveillance system showing data transmission channels from the health facilities to the national level has been found and functioning at all levels. When a suspected case presents to the health facility, the health workers diagnose based on case definition and confirmed using Laboratory or send samples to higher level (EHNRI) and recorded on registration book. Using weekly standard reporting form health facilities report cases to the district level on Monday of each week. Reports from health facilities are compiled at the district and submitted to the zonal level on Tuesday. Reports from districts are compiled at zone and the summary reported to region till mid Wednesday. At the regional level reports are compiled and sent to the Ministry of Health on Thursday using standard PHEM weekly reporting forms.

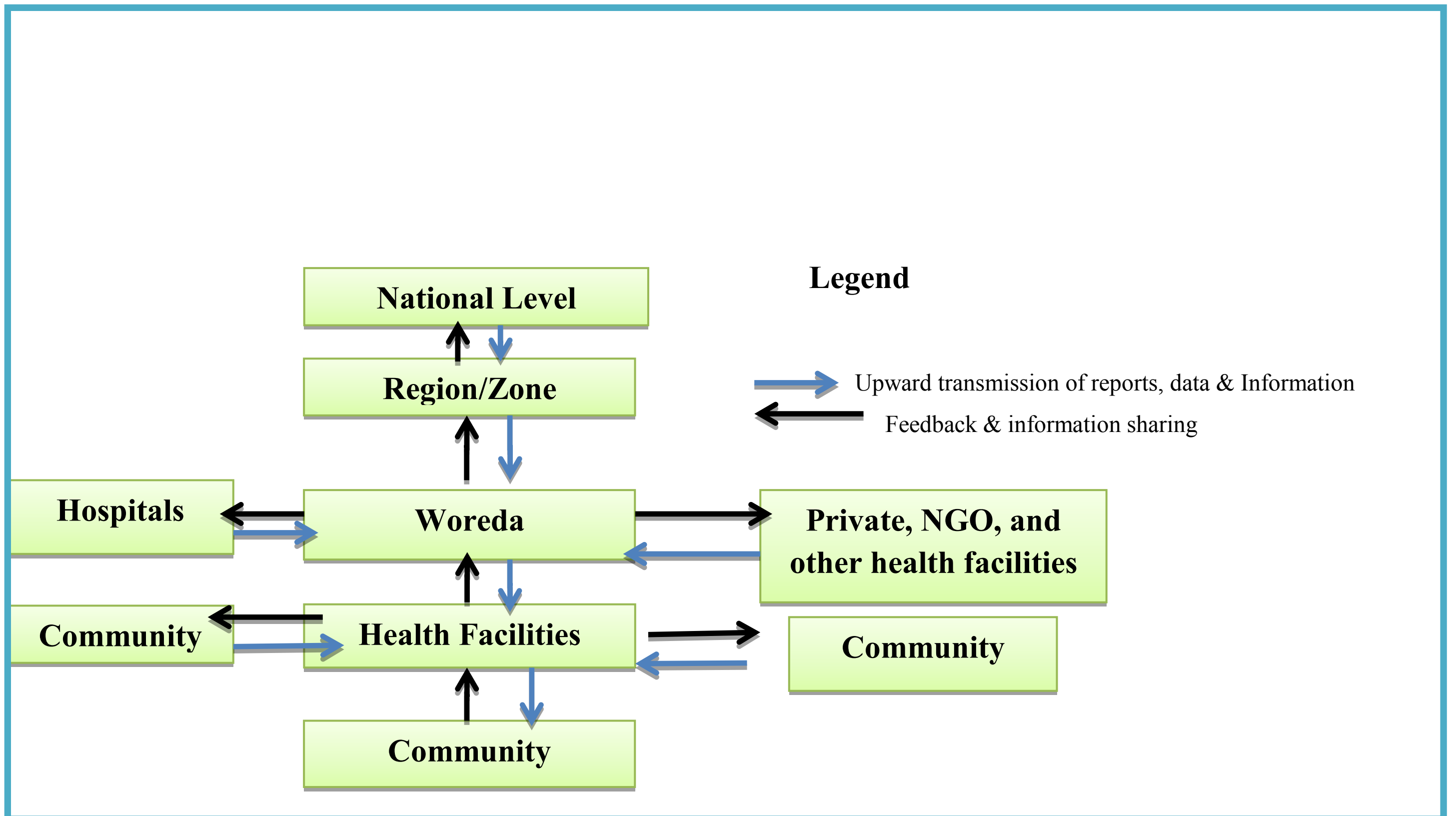



**Figure 19**: Diagram illustrating the formal and informal flow of surveillance data and information throughout a health system

**Description of selected Diseases (Malaria and severe acute malnutrition) in Surveillance system Evaluation**

**Malaria**

Due to different efforts made by government and non-government agencies on malaria prevention and control, cases had decreased during the past years. In Amhara Region 80% of the land is malarious, 75% of population is in risk of malaria and there are (97.6%) 163 hotspot districts for malaria in the region. On the other hand, in East Gojjam zone 67 %( 1,699,999) of the population is at risk of malaria. In the zone 10 of 11 (91%) districts and 142 of 200 (71%) kebeles are malarious. A total of 147,045 outpatient and inpatient cases of confirmed malaria cases and three deaths were reported in 2007 EFY. Number of malaria cases was high during major and minor transmission seasons. From week 1-52(January- December 2015) a total of

39,038 cases of clinical and confirmed malaria were reported, 22504 Cases positive for Plasmodium falciparum and 16,789 were positive for plasmodium vivax.

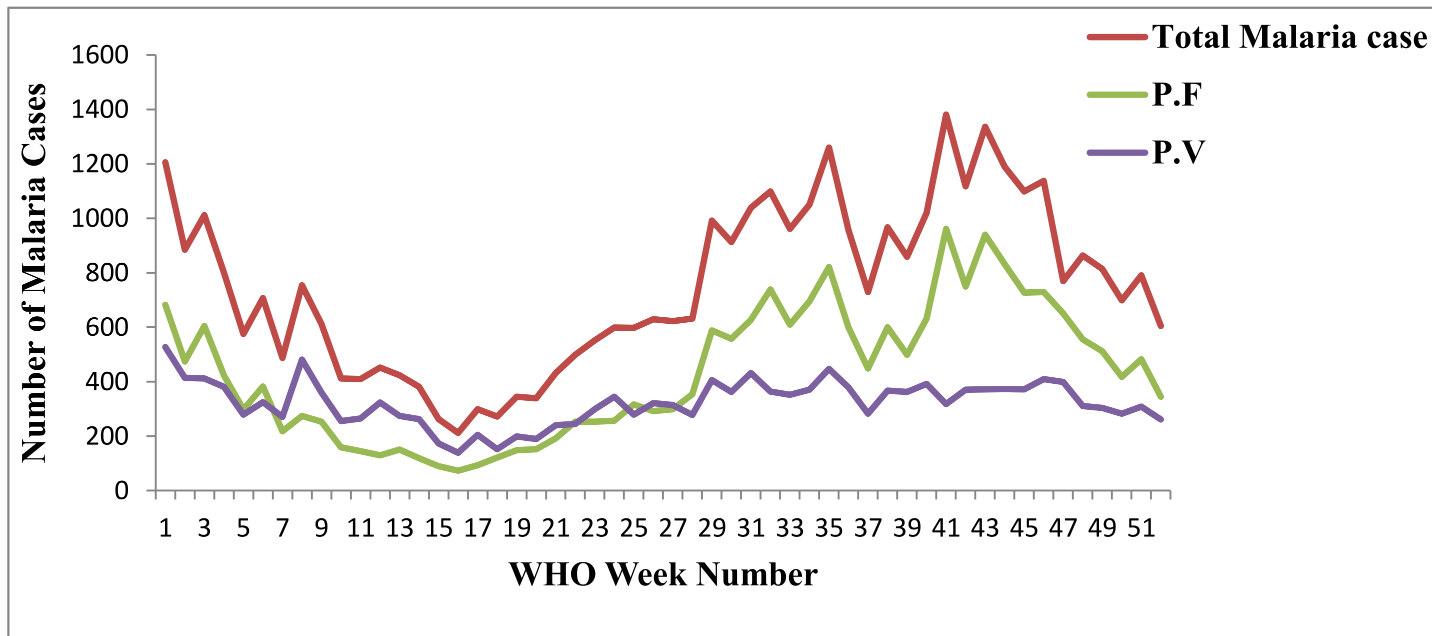



**Figure 20:** Trend of malaria cases by WHO week in East Gojjam Zone, Amhara region, from week no 1- 52, 2015

**Severe acute malnutrition**

In Amhara Region there are 79 Priority One Nutritional Hotspot woredas from these woredas three of them are located in East Gojjam zone .They are Enbise Saremder, Enarji Enawuga, Shebel Berenta woredas. A total of SAM cases from WHO week 42-10, 2015/2016(October – February) were some discrepancy between PHEM weekly report and weekly Emergency Nutrition report. According to standards that are previously stated the PHEM weekly report and weekly Emergency Nutrition report should be the same. In PHEM Weekly report form five month data from October – February (WHO Week 42 -10) 1191 but in weekly Emergency Nutrition report 1310, there was 119 differences. Number of SAM cases was high throughout October and November months (WHO Week 44-47), and then gradually decreases.

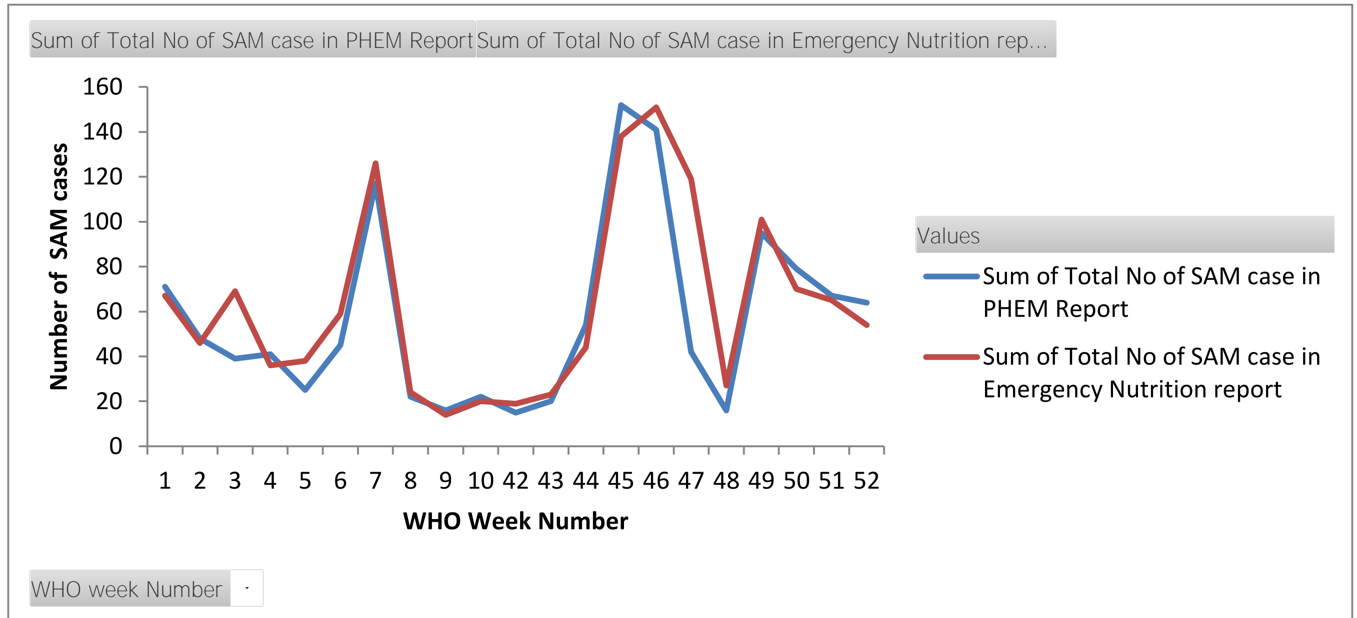



**Figure 21:** Trend of SAM cases by WHO week (PHEM report and Emergency Nutrition report) in East Gojjam Zone, Amhara, from week no 42-10, 2015

**Availability of Guidelines**

New Public Health Emergency Management guideline is distributed for all zones of Amhara region even in this region specially PHEM guideline were translated in to Amharic and published to be user friendly for health workers . In the same manner, all zones had distributed this guideline for their districts and during our visit we have observed that the guideline were present. In addition to this, health centers and health posts were supplied with PHEM guidelines. However, some health centers and health posts does not have National PHEM guideline during this assessment. Among six visited health centers 4 (33.3%) of them does not have this guideline and in health post they have National PHEM guideline but they does not recognize and be familiar with guideline. From management of Sever acute malnutrition, they have to use guideline Protocol for the management of severe acute malnutrition. Except in one health center in Shebel Berenta district, the rests of health centers does not have Guideline for management of severe acute malnutrition.

**Case detection and registration**

The cases definition of severe acute Malnutrition (SAM) and Malaria only available in (2) 33.3 % visited health facilities. Understanding of the available cases definitions by the health care providers was satisfactory at the time of visit but they were not using it. Registration books for

## Complied Body Works

Sever acute malnutrition for OTP (out-patient Therapeutic program) were available in all health facilities but registration books for SC (stabilization center) was not available in all setup. All health facilities have Malaria Mentoring chart but from Health post only (3) 50 %, health center (5) 83 % used properly and also all woreda health offices were properly used.

**Standard case Definition**

**Malaria:** Any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea, and vomiting diagnosed clinically as malaria.

**Severe Acute Malnutrition (SAM):** Children age from 6 months to 5 years with MUAC less than 11cm and/or children with bilateral edema regardless of their MUAC.

**Community Case Definition**

**Malaria:** Any person with fever OR fever with headache, back pain, chills, rigor, sweating, muscle pain, nausea and vomiting OR suspected case confirmed by RDT.

**Severe Acute Malnutrition (SAM):** Children age 6 months to 5 years with MUAC less than 11cm and bilateral leg edema OR Children age 6 months to 5 years with bilateral leg edema.

**Population under surveillance**

**Table 18:** The Population under surveillance in the assessed zone and districts by place of residence (Population Projected from the 2008 National Census Ethiopian)

| Areas Under Assessment | Total Population | Rural | Urban |
|---|---|---|---|
| East Gojjam Zone | 2,539,491 | 2,199,199 | 340291 |
| Enbes Saremder | 156,738 | 130,914 | 25,824 |
| Enarj Enawuga | 201,003 | 166,616 | 34,387 |
| Shebel Berenta | 127,396 | 100,205 | 2,791 |

The majority of the communities live in the rural area of the zones and the districts (see table 18). In 2015 the overall health care coverage of the zone was100%.

**Table 19:** Number of health facilities in East Gojjam zone, Enbes Saremder, Enarji Enawuga and Shebel berenta district, 2015.

| Woreda | Number of Health Facilities Expected to Report | | | | | Health coverage |
|---|---|---|---|---|---|---|
| | Health Post | Health center | Hospital | NGO | Other | |
| Enbes Saremder | 33 | 7 | 0 | 0 | 1 | 100% |
| Enarji Enawuga | 27 | 7 | 0 | 0 | 0 | 100% |
| Shebel Berenta | 19 | 5 | 0 | 0 | 2 | 100% |

**Data Reporting**

During the last ten months, shortage of weekly PHEM reporting formats was observed in 1 (66 %) district, 2 (66 %) health centers and 1(16%) health post, especially there is no weekly PHEM reporting format for health post in Enarji Enawuga district. However, these districts and health facilities solved their problem by copying and manually preparing the formats. East Gojjam zone uses email and telephone to report weekly surveillance activities to next level. All visited districts are using telephone to report for zonal health office. Health centers and health posts use manual way or their personal mobile phones to send reports, for which they raise, complain for refund. However reporting through telephone is limited in health posts where there were no telephone services.

**Table 20:** The Reporting rates of the health facilities in East Gojjam zone in 15 weeks (Week 38- 52) September -December, 2015

| S.No. | WHO Week | H/ post | | H/center | | Hospital | | NGO | | Others | | Total No of health facilities | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | Reported | Expected | Reported | Expected | Reported | Expected | Reported | Expected | Reported | Expected | Reported | Expected |
| 1 | 38 | 401 | 402 | 100 | 100 | 2 | 2 | - | - | 13 | 20 | 516 | 524 |
| 2 | 39 | 399 | 402 | 100 | 100 | 2 | 2 | - | - | 16 | 20 | 517 | 524 |
| 3 | 40 | 399 | 402 | 100 | 100 | 2 | 2 | - | - | 17 | 20 | 518 | 524 |
| 4 | 41 | 402 | 402 | 100 | 100 | 2 | 2 | - | - | 14 | 20 | 518 | 524 |
| 5 | 42 | 402 | 402 | 100 | 100 | 2 | 2 | - | - | 17 | 20 | 521 | 524 |
| 6 | 43 | 402 | 402 | 100 | 100 | 3 | 3 | - | - | 17 | 20 | 522 | 525 |
| 7 | 44 | 402 | 402 | 100 | 100 | 3 | 3 | - | - | 17 | 20 | 522 | 525 |
| 8 | 45 | 399 | 402 | 100 | 100 | 3 | 3 | - | - | 18 | 20 | 520 | 525 |
| 9 | 46 | 400 | 402 | 100 | 100 | 3 | 3 | - | - | 19 | 20 | 522 | 525 |
| 10 | 47 | 400 | 402 | 100 | 100 | 2 | 3 | - | - | 17 | 20 | 519 | 525 |
| 11 | 48 | 399 | 402 | 100 | 100 | 2 | 3 | - | - | 15 | 20 | 516 | 525 |
| 12 | 49 | 399 | 402 | 100 | 100 | 2 | 3 | - | - | 19 | 20 | 520 | 525 |

| 13 | 50 | 395 | 402 | 100 | 100 | 2 | 3 | - | - | 19 | 20 | 523 | 525 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 14 | 51 | 399 | 402 | 100 | 100 | 2 | 3 | - | - | 19 | 20 | 520 | 525 |
| 15 | 52 | 399 | 402 | 100 | 100 | 4 | 4 | - | - | 19 | 20 | 522 | 526 |
| Average No of reports per week | | 399.8 | | 100 | | 2.4 | | | | 17 | | 519.6 | |
| Average reporting rate per wk (%) facility type | | | 99.8% | | 100% | | 87.8% | | | | 85.3% | | |
| Zonal average reporting rates (%) in a week | | | | | | | | | | | | | 99% |

**Data Analysis**

At zonal level SAM and malaria are analyzed weekly by person, time and place. In all visited health offices and health facilities, there was a responsible person for data analysis that means PHEM and malaria focal persons are responsible for data analysis of selected diseases but analysis is performed weekly only for malaria disease. For other diseases, it is performed once or twice per year. This may be due to lack of awareness, training, commitment and resources such as computer; they used manual method for entry and compilation. Among six visited health posts, four of them are performing only trend analysis for malaria in weekly basis. On the other hand, analysis on other reportable diseases in health posts has not been done totally. Even though there are thresholds of 20 prioritized diseases on National PHEM guideline, Action threshold level is available at Zonal and all visited district level on National PHEM Guideline but some health facility focal person did not know/understand it properly. For example, among 12 health professionals who were asked for threshold levels for selected diseases, 5 (41.6%) of them were respond correctly. This showed that utilization of surveillance manuals and guidelines is not good at district and health facility levels.

**Epidemic preparedness and response**

The epidemic management committee and the rapid response teams were activated only when there is an event. Moreover, they did not evaluate their preparedness. At zone and districts level, PHEM was raised as an agenda in the annual and sometimes quarterly health office performance review meetings. Health offices (zone and districts) responded that they set epidemic

preparedness and response plans for their priority diseases, and have epidemic management committee with rapid response team. There were no written documents for epidemic management committee and also rapid response team in visited health facilities and districts. On the other hand, there was no budget allocated for epidemic response at all levels except in Enarji Enawuga district, and districts health department has no stockpile or budget line for emergency as results shortage of emergency drugs and supplies were encountered.

**Outbreak Investigation**

Most of the assessed districts experienced one or more types of outbreaks in the previous years. There were outbreaks of Measles in five districts (Bibugn, Goncha siso, Hulet eju Sinan, Shebel Berenta), scabies in seven district including visited districts and Severe Acute Malnutrition in eight district including visited districts, some of the outbreaks were not reported within 48 hours to their respective health offices. Zonal staff was participated in investigation of these outbreaks with regional and hospital professionals including EFETP residents. At this zone, risk factors of these diseases were looked during investigations.

**Feedback and Supportive Supervision**

In majority of visited districts, producing and dissemination of written feedback for health facilities is very poor. East Gojjam zone health department has given written feedback for all districts in 2015/16. PHEM focal persons at zonal and district level have been giving feedback for health facilities orally and writing on their registration book during their field visit. Many districts give written feedback for health facilities with integration of other activities that consists few indicators of surveillance activities quarterly. East Gojjam zonal department conducted supportive supervision every quarterly on surveillance activities for districts and health facilities. Many districts have conducted integrated supportive supervision for health facilities with limited number of surveillance indicators. Among six visited health centers 3 (50%) had never supervised during the past 9 months by higher levels and from 6 visited health posts, 2 (33.3%) were not supervised in the past 6 months by higher levels. Reporting system, active case searches and other surveillance activities were reviewed in supervised districts and health facilities. Shortage of vehicle, budget and logistics were attributed for incapability of conducting regular supportive supervision at all level.

# Complied Body Works

**Training of Surveillance Activities**

To strengthen the surveillance activities the Amhara National Regional Health Bureau Public Health Emergency Management (ANRHB/PHEM) core process planned to conduct training. In 2014/2015 regional PHEM with partners (WHO and UNIF) have conducted training for zonal and district's PHEM focal persons. In each visited districts all PHEM focal persons were trained on disease surveillance and National PHEM Guideline. Additionally, there was no any trained personnel at all visited health center similarly, none health extension worker was trained on surveillance activity. During training, professionals which are not working on PHEM were sent from some districts and it was one of a challenge for the training.

**Level of usefulness of the surveillance system**

All the participants of this assessment responded that the surveillance system was helpful at Zone, woreda and health facility level to detect outbreaks of priority diseases early on time. It also helps to have and permit accurate diagnosis. Surveillance system also enables to estimate the magnitude of morbidity and mortality related to each disease, including identification of factors associated with these diseases at all levels of health service giving institutions. The effect of prevention and control programs can be evaluated by the surveillance system. In all the assessed woredas including the Zonal Health department and six health centers and six health posts the surveillance system had been recognized and understood as the base for controlling the public health emergencies.

**Attributes of the Surveillance System**

**Simplicity**

The case definition for malaria and SAM is easy to apply and in which the person identifying the case will also be the one analyzing and using the information. All visited zonal, district and health facility respondents agreed that case definitions of selected diseases are easy and applicable for case detection by all level professionals. In addition, they believe that community case definitions are easy to understand at community level since there is good active surveillance. In all health facilities, 99% of asked professionals were responding correctly for case definitions of selected diseases malaria but 90% for SAM. All respondents at each level were familiar with when and for whom report will send. However, manual data entry and collecting weekly reports from multiple reporting sources at district make it complex and to monitor the trend of malaria cases by using monitoring chart health extension workers get

difficulty to convert calendar in to WHO week number. PHEM focal persons at zonal and district level thought that additional data collection on cases are not time consuming rather it is important to deal with. Respondents at all level told that it takes 10 - 15 minutes to fill weekly reporting format on morbidity and mortality of priority disease.

**Flexibility**

As the current reporting format contains additional spaces at the end for both weekly and immediately reportable diseases with namely; others, it can accommodate newly occurring health events/disease to fill on without any difficulty except for language barrier particularly at the health post level. Also, weekly reporting format can be modified based on current situation and different concerns the system is designed in a way that is flexible to include diseases that emerged and reemerged; for instance, following the occurrence of scabies outbreak in 2015.

**Data Quality**

Data Quality is completeness and validity of the data recorded in the public health surveillance, for instance percentage of "blank or "unknown" responses. In all visited districts and health facilities except in health post reported format were complete and clearly filled. Therefore the data quality at zonal, woreda, and health center level is appreciated. On the other hand, due to lack of training some health extension workers were observed to be confused with this, other reason at health post level, due to many health extension workers are not good in English they did not understand some variables and phrases on reporting formats. Major problems identified at different levels on filling reporting format are blank spaces that should be filled with zero (0) number but no were observed at health facility level especially in health post level. Duration of weekly report is missed during report compiling mainly at health post level and documenting copies of report in sequential manner is poor at health facility levels.

## Complied Body Works

### Acceptability

Acceptability is largely subjective attribute that encompasses the willingness of persons on whom the system depends to provide accurate, consistent, complete and timely data. Active participation of agents in case detection reporting system of surveillance activities in regular pattern is a major attribute for system's acceptability. In 2015 PHEM weekly reporting rate was 99% for East Gojjam zone PEHM health department. Of all facilities privates are less likely to send weekly PHEM report. This can be due to lack of understanding the relevance of data by these facilities and poor monitoring system of governmental organizations. In health post level they did not send a report timely and completely. This may arise from weak communication system (Network and transport), lack of reporting formats, poor working motivation and considering surveillance activities as additional work.

### Representativeness

Representativeness can be evaluated by access to health services coverage and the reporting rate of the health facilities reporting rate. Following implementation of health extension program, majority of the population are accessed to basic health services. Many health posts were constructed since implementation of this program and Women developmental army is a crucial strategy that established and implementing to optimize utilization of health service through entire community. Zone Health care coverage was 100%.On the other hand, most of bordering health posts and private health facilities not reported regularly due to lack of communication and awareness in turn.

### Timeliness

Timeliness reflects the speed or delay between steps in surveillance system. As per standard of National PHEM the expected level of report timeliness is 80% and above. Early case detection is another key attribute of timeliness assessment. Timeliness is the time required for the identification of trends, outbreaks, or the effect of control measures. The weekly report timeliness in the zone in the previous fiscal year (2015) was 99% and the timeliness of Enarji Enawuga, Enbise Saremder and Shebel Berenta was 95%, 94 % and 90% respectively. However since the date sent to the next level is not recorded and even copy of each report is not filed, It is difficult to know exactly the number of facilities which reported on timely.

**Sensitivity**

The sensitivity of ta surveillance system can be considered on two levels. First, at the level of case reporting, the proportion of cases of a disease or health condition detected by the surveillance system can be evaluated. Second, the system can be evaluated for its ability to detect epidemics.

First, the sensitivity of the surveillance system affected by or else the capacity of the surveillance system to capture cases in the community are dependent on different reasons: one reason could be persons with certain diseases or health conditions seek medical care, which was generally commented as poor, particularly reporting sever acute malnutrition with surveillance system was challenging. The other reason is the diseases or conditions will be diagnosed, reflecting the skill of care providers and the sensitivity of diagnostic tests, that means lack of case management capacity of the health posts; the health post record and report those whom they can give treatment like anti- malaria (coartem) and RDT otherwise, cases are not recorded and reported if they have no any drug. From this time, the number of cases reported from the health post will be high when they have anti-malaria and RDT at hand, On the other hand Sever acute malnutrition, the health post record and report high when they done mass screening otherwise, in weekly report cases remained low and on the other hand screening skill of health extension workers. These factors undermine the burden of cases in the community, hence the sensitivity of the surveillance to pick the case to be low.

Secondly, the capacity of the surveillance system to detect an outbreak is influenced by the definition of the outbreak. We found case definitions of Malaria and SAM in two health centers from six health center and in the one health posts out of the six health posts visited .All the case definitions found in the health posts were prepared in English, despite there were case definitions in Amharic. Some of them failed to state the case definition, even though there was case definition on the wall of the room where they are working. All of the six health extension workers said that they preferred Amharic case definitions to English. In general, Sensitivity is the proportion of cases of a disease (or other health-related event) detected by the surveillance system and ability to detect outbreaks.

**Predictive value positive**

Predictive value positive (PVP) is the proportion of persons identified as having cases who actually do have the condition under surveillance. It is possible to assess predictive value positive or proportion of reported cases by case definition that actually has the diseases. Based on this, among 132,095 suspected malaria cases in East Gojjam zone39,038 (PVP 29.5%) of them were confirmed as positive for malaria in 2015.On the other hand, it was not possible to measure the PVP of the surveillance system in our assessment of the surveillance of severe acute malnutrition, because cases confirmation of all suspected cases using case definition was done but they are not registered suspected cases and all health extension workers register only those severe acute malnutrition cases .

**Table: Predictive value positive for malaria cases in malaria visited districts, East Gojjam, Amhara 2015**

| S.No. | District | Suspected Malaria cases | Confirmed Malaria cases | PVP (%) |
|---|---|---|---|---|
| 1 | Enarji Enawuga | 4621 | 1337 | 28.9% |
| 2 | Enbes Saremder | 7237 | 2034 | 28.1% |
| 3 | Shebel Berenta | 6111 | 2517 | 41.2% |

**Stability**

Stability refers to the system‟s reliability (ability to collect, manage, and provide data without failure) and availability (ability to be operation when needed). However, there were several factors reported that made the system not stable. Availability of PHEM focal persons at Zonal, district and Health facility level is a good opportunity for running surveillance system even with limited resources but in health facility and district PHEM focal person have some other addition workload. On the Other hand lack of training, even if they training there are high turnover of health workers. Additional, there is no specific budget line for surveillance activities at zonal and district level, this means Shortage of budget and logistics is hindering supervision and capacity building activity at zonal and district level. Even though PHEM unit of many districts did not have some data management resources such as computer and printer, they are using manually or else other department's resource for data entry, compilation, analysis and dissemination like HIMS computer. Case definitions were available in only two (33.3%) health facilities and it was folded and thrown in inaccessible areas for use.

**Discussion**

The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively. Public health surveillance systems should be evaluated periodically to determine how well they operated to meet their stated purposes and objectives (8). From the time when established of PHEM as core process at Federal and Regional level significant achievements were recorded on surveillance activities. In Amhara region surveillance system evaluations were done in different zones by EFETP residents during the past years. Findings of these assessments were being inputs in strengthening surveillance activities. When we see usefulness of surveillance system, there was a surveillance focal person in all the visited sites but the focal persons had work overload like PHEM officers act as nutrition officer, Malaria officers and health education officer in addition to regular task and other problem are lack of capacity to do data analysis regularly . There was a poor practice of interpretation and utilization of surveillance data at facility and district level, simply compile data from lower level and submitted to region without further analysis, this might be due to shortage of trained man power, irregular supervision and feedback system, no legal enforcement to the surveillance activities, lack of sense of ownership. Thus the collected data has a limited usefulness.

The flow of data from lower level (heath post) to higher level (regional and national) is very great, however; reported cases were underestimated due to the trend of reporting only from governmental health facilities and very few higher private and NGO clinics, poor health seeking behavior of the population and problems with reporting means; infrastructure like vehicle for transport, telephone, fax machines and computers for data management and analysis. These impacted the completeness and timeliness by the health facility and it becomes low.

When we see from Week 7 – 25 (February – June) PV cases were increases than PF cases, the time increment was neither major nor minor malaria transmission season, so it may be due to relapsed PV cases.

Epidemic preparedness refers to the existing level of preparedness for potential epidemics and includes availability of preparedness plans, stockpiling, designation of isolation facilities, setting aside of resources for outbreak response (6). The epidemic preparedness and response plan had only in the zone, but in all Districts except in Enarji Enawuga, there is no well-organized epidemic preparedness and response plan and also epidemic response committees to review their

plans, actions. This may cause weak case detection and all responses to be late. In addition to this, the districts health offices were allowed for emergency budget from the district administration office only after an event has occurred, this may hinders timely investigation.

Further, it was identified that rapid response team is functional only during outbreak. But, Rapid Response team must be establishing before outbreak was occurred. Feedback is a key function of public health surveillance system, the purpose of the feedback is to reinforce efforts of the health staff to participate in the surveillance system. Another purpose is to raise awareness about certain diseases and any achievements of disease control and prevention activities in the area. When the woreda receive data, they should respond to the health facilities that reported it and all the levels have to give feedback to the level that sends those reports (6). At all visited level there is no strong written feedback; somehow it was better in zonal level. As region is essential role player in preparing and disseminating feedback of surveillance activities for zones and districts in different method. Current practice of the region on preparation and dissemination weekly bulletin is a good starting point to strength feedback system.

There is no problem on the simplicity of the system regarding case definitions of selected diseases, reporting system and additional data collected on cases at all visited levels. The case definition for malaria and SAM is easy to apply and in which the person identifying the case will also be the one analyzing and using the information but standard case definition not available and lack of communication made difficult to get weekly reports from health facilities and all health extension workers had no training on PHEM. Most private health facilities not volunteer to report that make it complex as well as at district level, manual data entry also, make it complex. The understandings of case definition among all health care providers were good but data management has some gaps.

All respondents agreed by that the surveillance system is flexible for newly occurring health and health related events. Even though reporting formats of priority diseases are easy and clear to fill for data. In general the system was flexible because, the reporting form could be modified to include other variables. Timeliness and completeness of report is important for the identification of trends, outbreaks, timely public health interventions. Timeliness in the weekly report at zonal level in the previous fiscal year (2015) was 99%; it is higher than expected national level (80%). The ability of the system to capture true cases regarding malaria disease was assessed in this

evaluation. On this regard, predictive value positive for malaria by case definition was very low in malarious districts of East Gojjam zone as majority of them were less than 50% in 2015.

**Limitations**

- Due to poor handling and management of data, it was unable to get some important data such as report timeliness from some districts and health facilities.
- Sometimes there was electric power interruption at zonal and some districts to collect and generate requested data.
- Inadequate literatures of similar study for better assessment

**Conclusion**

Surveillance system evaluation is key activity to identify strengths and weakness of the existing system. PHEM implementation has shown as a remarkable progress since the start of its implementation. PHEM processes have starting and ending point, the process starts with early warning and end with recovery. In East Gojjam zone the surveillance system was not satisfactory and the trend of supervision and feedback was not good at Zonal and district levels, accordingly efforts should be exerted to improve the system. It was identified that training of surveillance is required for health workers specially health extension workers since they are not trained. Following this, poor data management was observed at this level during the assessment. Regular monitoring and follow up of health extension workers from districts and zonal PHEM unit is very weak. Evidence of data analysis was not observed in some district health offices and health facilities. Lastly we concluded that supportive supervision on quarterly basis is a done in regional basis but specific surveillance system evaluation and feedback is not practiced at regular basis. Data utilization is very low at the lower level of the reporting unit. Even though in some extent the existing surveillance system at all visited level is likely addressing some important public health problems and meeting its objectives.

**Recommendations**

- Sustainability of PHEM requires strengthening the coordination and integration mechanisms as well as Strengthen multi-sectorial response teams at all levels
- Training should be given for health workers on surveillance activities to improve active case search and reporting system.
- Data quality assessment should be conducted at all levels as many problems were identified on reporting system during this evaluation.

## Complied Body Works

- There is shortage of weekly reporting formats in some district levels, So that timely and adequately distribution of these formats for facilities will help to improve quality of the report.
- During this assessment, some district‟s PHEM focal persons are working on surveillance activity as additional rather than routine works. For this reason, PHEM activities should be considered as core task and work on it with full responsibility and accountability at all districts.
- Utilization of National PHEM guideline and different manuals for management of prioritized diseases should be heightened at all levels
- Strong supportive supervision and feedback should be maintained in regular basis at all levels.
- Strengthening feedback system at all levels from zones to districts, districts to health center, health center to health post
- There should be held in reserve budget for epidemic response and preparedness plan must prepare in all setup.

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**Annex 3: Surveillance Evaluation**

Questionnaire of Malaria and Sever acute Malnutrition surveillance system evaluation in East Gojjam zone, Amhara, Ethiopia, October 2016

**BACKGROUND:**

Date-------------------Assessment team name: ___________________________

Interviewer name: ______________________________________________

Respondent name & position: ____________________________________

Surveillance System: _______________________________ Catchment population _______________________ Address: Office no _______________ Cell phone no -----------------

E-mail_______________________

**Questionnaire for Attributes and level of Usefulness:**

Total population under surveillance ------male-------female-----Under5--------

Level of Usefulness of the Surveillance System for country priority diseases is the surveillance system help? --------------------------------------------------------------

1. To detect outbreaks of priority diseases early on time to permit accurate diagnosis? ☐ Yes ☐ No
2. To estimate the magnitude of morbidity and mortality related to the diseases, including identification of factors associated with these diseases? ☐ Yes ☐ No
3. Permit assessment of the effect of prevention and control programs? ☐ Yes ☐ No
4. To estimate research intended to lead to prevention and control? ☐ Yes ☐ No

**Describe Each System Attributes:**

**i. Simplicity:**

1. Is the case definition of the priority diseases easy for case detection by all level health professionals? ☐ Yes ☐ No
2. The surveillance system allow all levels of professionals to fill data ☐ Yes ☐ No
3. Does the surveillance system help to record and report data on time? ☐ Yes ☐ No
4. Does the surveillance system have necessary information for investigation? ☐ Yes ☐ No
5. Does the surveillance system allow updating data on the cases? ☐ Yes ☐ No
6. How long it takes to fill the format? ☐ <5 minute ☐5 to 10 minute ☐ 10 to15minut ☐ >15 minutes

7. How long does it take to have laboratory confirmation? ----------------------------------------- .

**ii. Flexibility**

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? ☐ Yes ☐ No

2. Did you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement? ☐ Yes ☐ No, Add your explanation-------------------------
-----------------------------------------------------------------------------------------------------------

3. Is the system easy to add new variables? ☐ Yes ☐ No

4. Is the surveillance system easy to integrate with other systems? ☐ Yes ☐ No

5. Is the surveillance system easy to add new disease on report? ☐ Yes ☐ No

6. Is the system easy to add new information technology? ☐ Yes ☐ No

**iii. Data quality**

1. Are all reported forms Complete? ☐ Yes ☐ No

2. If answer for Q1 is No, how many unfilled spaces are in your 2008 EFY report? --------------

3. Percentage of unknown or blank responses to variables from the total reports of 2008 EFY report- ----------

4. Percent of reports which are complete (that is with no blank or unknown responses) from the total reports ----------------------------

5. Is the recorded data clear to read and understand? ☐ Yes ☐ No

6. If answer for Q5 is No, how many records are not clear/are difficult to understand in 2008 EFY report? ---------------------------------------------------------

7. Percent of records which are difficult to read/ understand. ----------------------------------------

**iv. Acceptability**

**1.** Do you think all the reporting agents accept and well engaged to the surveillance activities? ☐ Yes ☐No

**2.** If yes, how many are active participants (of the expected)? -----------

**3.** If No, what is the reason for their poor participation in the surveillance activity?

A) Lack of understanding of the relevance of the data to be collected

B) No feedback / or recognition given by the higher bodies for their contribution; i.e. no dissemination of the analysis data back to reporting facilities

C) Reporting formats are difficult to understand

D) Report formats are time consuming

E) Other: ----------------------------------------------------------------------------------------------------

**4.** Were all participants using the standard case definition to identify cases? ☐ Yes ☐ No

**5.** Were all the reporting agents send their report using the current and appropriate surveillance reporting format? ☐ Yes ☐ No

**6.** Were all the health professionals aware about the surveillance system? ☐ Yes ☐ No

**7.** Was all PHEM officers send report on time? ☐ Yes ☐ No

**v. Representativeness**

1. was the surveillance system enabled to follow the health and health related events in the whole community? ☐ Yes ☐ No

2. If answer for Q1 is no, who do you think is well benefited by the surveillance system? ☐ The urban ☐ the rural ☐ both

3. Are all the Socio demographic variables included in the surveillance reporting format? ☐ Yes ☐ No

4. If the answer for Q3 is No, which a) Sex---------- b) age group------------------------

C) Ethnic group----- d) religion-------------------------------------------- is less represented?

**vi. Timeliness**

1. Are all woredas/health facilities reporting on time? ☐ Yes ☐ No

2. Percent of woredas that report on time. --------------

3. Are all Hospitals reporting on time? ☐ Yes ☐ No

4. Percent of hospitals that report on time. ---------------------------------- Fill the table below

A). Weekly Zonal reports received on time for 2015 report by WHO epidemic week to be field at Zonal health department)

| WHO Epi Wk | No of woredas expected to report | No of woredas that report on time | No of hospital expected to report | No of Hospital that report on time | No of private expected to report | No of private that report on time |
|---|---|---|---|---|---|---|
| 27 | | | | | | |
| 28 | | | | | | |
| 29 | | | | | | |
| 30 | | | | | | |
| 31 | | | | | | |
| 32 | | | | | | |
| 33 | | | | | | |

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| 48 | | | | | | | |
| 49 | | | | | | | |
| 50 | | | | | | | |
| 52 | | | | | | | |

B). Weekly woreda reports received on time for 2015 report by WHO epidemic week to be field at woreda health department)

| WHO Epi Wk | No of Hcs expected to report | No of HCs that report on time | No of HP expected to report | No of HP that report on time |
|---|---|---|---|---|
| 27 | | | | |
| 28 | | | | |
| 29 | | | | |
| 30 | | | | |
| 31 | | | | |
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| 43 | | | | |
| 44 | | | | |
| 45 | | | | |

| 46 | | | | |
|---|---|---|---|---|
| 47 | | | | |
| 48 | | | | |
| 49 | | | | |
| 50 | | | | |
| 52 | | | | |

**vii. Completeness**

1. Are all woredas reporting (including late report)? ☐ Yes ☐ No

2. Percent of woredas that send report of each week in 2008 EFY ----------------

3. Are all hospitals reporting? ☐ Yes ☐ No

4. Percent of hospitals that send report of each week in 2008 EFY -----------------------

**viii. Stability**

1. Was any new restructuring affected the procedures and activities of the surveillance of these diseases? ☐ Yes ☐ No

2. Was there lack of resources that interrupt the surveillance system? ☐ Yes ☐ No

3. Was there any time /condition in which the surveillance is not fully operating? ☐ Yes ☐ No

4. If the answer for Q3 is yes When/what is the condition that talks the system not to function properly?-----------------------------------------------------------------------------------------------------

NB: the above assessment check lists for the system attribute and level of usefulness are for both Zonal and woredas health offices.

**Questionnaires for Zonal health desk**

**A. Communication and reporting system assessment**

1. Which communication material did you have? ☐ E-mail ☐ wired phone ☐ mobile ☐ radio ☐ fax ☐ other-------------------------------------------

2. Did you have address of regional PHEM officers? ☐ Yes ☐ No

3. How frequently are you communicating with the regional PHEM officers on emergencies and other daily activities? ☐ Daily ☐ weekly ☐ every 2 week ☐ monthly ☐quarterly ☐ every 6 month ☐ yearly ☐ others

4. Did you have address of woreda/health facility PHEM officers? ☐ Yes ☐ No

5. How frequently are you communicating with the woreda/health facility PHEM officers on emergencies and other daily activities? ☐ Daily ☐ weekly ☐ every 2 week ☐monthly ☐ quarterly ☐ every 6 month ☐ yearly ☐ others------------------------------

6. When are you expected to send weekly report to the Regional PHEM unit? ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday

7. When are you expected to receive weekly report from woredas /health facilities? ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday

8. How is the Zone communicating the woredas/health facility PHEM officers in case of immediately reportable diseases? ☐ By e-mail ☐ by phone ☐ by fax ☐ regular weekly report ☐ others--------------------------------------------------------------------------------------

9. Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing important issues at community level that have arisen through the surveillance system?☐ Yes ☐ No

10. If answer for Q9 is yes to whom did you send? ------------------------------------------------------ ---------------------------------------------------------------------------------------------------

11. If you faced any problems on communicating and reporting, list them------------------------------ -- ------------------------------------------------------------------------------------------------------------ - -----------------------------------------------------------------------------------------

12. Mention the alternative solutions that you take to tackle the problems you above? ------------- --------------------------------------------------------------------------------------------------------------

**B. Assessment of availability of Surveillance Documentation, Registers, and Forms**

1. Did you have National Guide line for PHEM? ☐ Yes ☐ No ☐ Not Applicable

2. Did you have standard case definition for all country priority diseases? ☐ Yes ☐ No ☐ Not Applicable

3. Was the case definition posted? ☐ Yes ☐ No

4. If answer for Q2 is No, for which disease(s) did you lack the case definition? -------------------- -------------------------------------------------------------------------------------------------------------- ---------------------------------

5. Did you have case reporting formats for out breaks?☐ Yes ☐ No ☐ Not Applicable

6. Was there national manual for surveillance? ☐ Yes ☐ No ☐ Not Applicable

7. Was there guide line for specimen collection, handling and transportation to the next level? ☐ Yes ☐ No ☐ Not Applicable

8. Did you have line list for reporting outbreaks? ☐ Yes ☐ No ☐ Not Applicable

9. Did you face shortage of surveillance reporting and recording formats?☐ Yes ☐ No

10. If answer foe Q9 is yes, which form? ----------------------------------------------------------

**C. Data analysis, Computer skill and training assessment**

1. Had you trained on surveillance system? ☐ Yes ☐ No

2. If answer for Q1 is yes a) when-----------------------------? b) Topic-----------------------------? c) For how long? ------------------------------------------------------------------

3. Did you give any onsite training / orientation about surveillance system for the woredas or health facility PHEM focal persons? ☐ Yes ☐ No

4. Was data compiled and registered? ☐ Yes ☐ No

5. Did you have computer on your office? ☐ Yes ☐ No

6. Did you have computer on your department (PHEM unit)? ☐ Yes ☐ No

7. What is the data entry and compilation instrument? ☐ Manual ☐ Computer ☐ other

8. Did you have computer skill on ☐ MS word ☐ MS excel ☐ MS power point ☐ Epi-info 9. Did you analyze data of the surveillance system? ☐ Yes ☐ No

10. If answer for Q9 is yes, did you describe data by ☐ time ☐ place ☐ person

11. Did you have denominators for data analysis?☐ Total population ☐ male ☐ female ☐ U5

12. Please indicate the frequency of your data analysis. ☐ Weekly ☐ every two week ☐ Monthly ☐ quarterly ☐every 6 month ☐ annually ☐ No regular time

13. Did you notify the results of your analysis to the higher level PHEM? ☐ Yes ☐ No 14. Did you notify the results of your analysis to the lower level PHEM? ☐ Yes ☐ No

15. If answer for Q9 is No, what is the reason? ☐ lack of knowledge ☐ shortage of time do you to work load ☐ less attention given to data analysis ☐ shortage of materials ☐ analysis is not familiar activity in place ☐ negligence ☐ Other-------------------------------------------------

**D. Epidemic response and preparedness assessment**

1. Did you have plan for epidemic response and preparedness? ☐ Yes ☐ No

2. Did you have emergency stocks of drugs and supplies? ☐ Yes ☐ No

3. If answer for Q2 is No, how did you control epidemics? -------------------------------------------------- ----------------------------------------

4. Had you experienced shortage of drugs, vaccines and supplies in 2008 EFY? ☐ Yes ☐ No

5. Was an epidemic management committee built in your office?☐ Yes☐ No ☐Not Applicable

6. Did the epidemic management committee have regularly scheduled meeting time? ☐ Yes ☐ No

7. Was Rapid response team built in your office? ☐ Yes ☐ No ☐ Not Applicable

8. Did the Rapid response team have regularly scheduled meeting time during epidemics? ☐ Yes ☐ No

9. Did you have case management protocol for epidemic prone diseases? ☐ Yes ☐ No ☐ Not Applicable

10. Did your PHEM have multi sect oral emergency preparedness and response task force? ☐ Yes ☐ No ☐ Not Applicable

11. In what frequency did the task force meet during outbreaks? -------------------------------------

12. Were partners working together with your office on emergencies? ☐ Yes ☐ No

13. If answer for Q12 is yes, what type of supports did they give to your office? ------------------- -------- ----------------------------------------------------------------------------------------------------

14. Was there a budget for epidemic response? ☐ Yes ☐ No

15. Who had the authority to mobilize the emergency finance? ☐Zonal head ☐ Zonal health department ☐ experts ☐ other----------------------------------------------------------------------

16. Had you a car assigned for emergencies (PHEM)? ☐ Yes ☐ No ☐ Not functional

17. If answer for Q16 is NO, how did you address emergencies? ------------------------------------- -------- ---------------------------------------------------------------------------------------------------

18. Had you faced any Challenges on epidemic response and preparedness in 2008 EFY? ☐ Yes ☐ No

19. If answer for Q18 is yes, a) list the challenges------------------------------------------------------- ------ ------------------------------------------------------------------------------------------------------------ --------- ------------------------- b) what measures did you take to tackle the challenges?------------- -------------------------------------- ------------------------------------------------------------------------- ----------------------------------------- -------------------------------------------------------------------

**E. Outbreak investigation and case confirmation assessment**

1. Had you investigated any outbreak in 2008 EFY? ☐ Yes ☐ No

2. Did you have outbreak investigation check list? ☐ Yes ☐ No

3. If answer for Q2 is No, how did you know possible factors for the outbreak? --------------------- ---- ---------------------------------------------------------------------------------------------------

4. Where was laboratory confirmation of cases done? ☐ Regional laboratory ☐ Hospital ☐ EHNRI
☐ health center ☐ contracted private laboratory ☐ other-------------------------------
5. Who was responsible to investigate an outbreak? ☐ Rapid response team ☐ HEW ☐ staffs of woreda health office ☐ experts organized randomly ☐ health facility staffs ☐ other----------------
6. If answer for Q1 is yes how many out breaks did you investigated in 2008 EFY ------------ ------------------------------------------------------------------------------------------------------------ ----------------------------
7. Had you faced any challenge in outbreak investigation in 2003 EFY? ☐ Yes ☐ No
8. If answer for Q7 is yes, a) list the challenges---------------------------------------------------------- ------ ----------------------------------------------------------------------------------------------------------- --------- -------------------------b) list the alternatives that you take to tackle the challenges.--------- ------------------------------------- ---------------------------------------------------------------------------- ---------------------------------------- ------------------------------------------------------------------------- -----------------------

**F. Supervision and feedback assessment**

1. Did you have supervision plan in 2008 EFY? ☐ Yes ☐ No
2. If answer for Q1 is No, how did you supervise? ------------------------------------------------------ ------ ---------------------------------------------------------------------------------------------------
3. If answer for Q1 is yes, did you supervise the woredas and health facilities? ☐ Yes ☐ No
4. If answer for Q3 is No, what is the reason? ----------------------------------------------------------- ------ -----------------------------------------------------------------------------------------------------
5. If answer for Q3 is yes, how many times did you supervise each woreda and health facilities in 2008 EFY? Woreda--------------- Health facility----------------------
6. Had you reviewed about surveillance practice by higher level supervision ☐ Yes ☐ No
7. Did you have regular supervision checklist? ☐ Yes ☐ No
8. If answer for Q7 is No, how did you supervise the woredas and health facilities? ---------------- ------------------------------------------------------------------------------------------------------------ ---------------------------------
9. Were you supervised by higher level (regional) officers in 2008 EFY? ☐ Yes ☐ No
10. If answer for Q9 is yes, how many times in 2008 EFY? -------------------------

11. Did you send feedback of your supervision to the woredas and health facilities commenting/indicating their strong and weak sides? ☐ Yes ☐ No

12. If answer for Q11 is No, why? -------------------------------------------------------------------- ----------------------------------------------------------------------------------------------------

13. If answer for Q11 is yes, for how many woredas and health facilities did you send a feedback in 2008 EFY? Woredas---------------- health facilities------------------------------

14. Had you received feedback from higher level supervisors in 2008 EFY? ☐ Yes ☐ No

15. If answer for Q14 is yes, how many feedbacks did you received in 2008 EFY? -------

16. Had you faced any challenge on supervision and feedback in 2008 EFY? ☐ Yes ☐ No

17. If answer for Q16 is yes, a) list the challenges.------------------------------------------------------ ------- ----------------------------------------------------------------------------------------------------- ---------- ------------------------- b) list the measures that you take to tackle the challenges.---------- ------------------------------------ ----------------------------------------------------------------------

**QUESTIONNAIRE FOR THE WEREDA HEALTH OFFICES**

**A. Communication and reporting system assessment**

1. Which communication material did you have? ☐ E-mail ☐ wired phone ☐ mobile ☐ radio ☐ fax ☐ other---

2. Did you have address of Zonal PHEM officers? ☐ Yes ☐ No

3. How frequently are you communicating with the Zonal PHEM officers on emergencies and other daily activities? ☐ Daily ☐ weekly ☐ every 2 week ☐ monthly ☐ quarterly ☐ every 6 month ☐ yearly ☐ other

4. Did you have address of HC/HP PHEM focal persons? ☐ Yes ☐ No

5. How frequently are you communicating with the HC/HP PHEM focal persons on emergencies and other daily activities? ☐ Daily ☐ weekly ☐ every 2 week ☐ monthly ☐ quarterly ☐ every 6 month ☐ yearly ☐ others----------------------------------------------

6. When are you expected to send weekly report to the Zonal PHEM unit? ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday

7. When are you expected to receive weekly report from HCs/HPs? ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday

8. How is the woredas communicating the HCs/HPs PHEM officers in case of immediately reportable diseases? ☐ By e-mail ☐ by phone ☐ by fax ☐ regular weekly report ☐ others

9. Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system? ☐ Yes ☐ No

10. If answer for Q9 is yes to whom did you send? ---------------------------------------------------

11. If you faced any problems on communicating and reporting, list them-----------------------------
------ --------------------------------------------------------------------------------------------------------
--------- ----------------------------------------------------------------------------------------------

12. Mention the alternative solutions that you take to tackle the problems you above? -------------
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--------- ----------------------------------------------------------------------------------------------

**B. Assessment of availability of Surveillance Documentation, Registers, and Forms**

1. Did you have National Guide line for PHEM? ☐ Yes ☐ No ☐ Not Applicable

2. Did you have standard case definition for all country priority diseases? ☐ Yes ☐ No ☐ Not Applicable

3. Was the case definition posted? ☐ Yes ☐ No

4. If answer for Q2 is No, for which disease(s) did you lack the case definition? -------------------
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-5. Did you have case based reporting formats for out breaks?☐ Yes ☐ No ☐ Not Applicable

6. Was there national manual for surveillance? ☐ Yes ☐ No ☐ Not Applicable

7. Was there guide line for specimen collection, handling and transportation to the next level? ☐ Yes ☐ No ☐ Not Applicable

8. Did you have line list for reporting outbreaks? ☐ Yes ☐ No ☐ Not Applicable

9. Did you face shortage of surveillance reporting and recording formats?☐ Yes ☐ No

10. If answer foe Q9 is yes, which form? -------------------------------------------------------

**C. Data analysis, Computer skill and training assessment**

1. Had you trained on surveillance system? ☐ Yes ☐ No

2. If answer for Q1 is yes a) when-----------? b) Topic----------------------------? c) For how long? ------------------

3. Did you give any onsite training / orientation about surveillance system for the HC and HP PHEM focal persons? ☐ Yes ☐ No

4. Was data compiled? ☐ Yes ☐ No

5. Did you have computer on your office? ☐ Yes ☐ No

6. Did you have computer on your department (PHEM unit)? ☐ Yes ☐ No

7. What is the data entry and compilation instrument? ☐ Manual ☐ Computer ☐ other------------
------------------------------

8. Did you have computer skill on ☐ MS word ☐ MS excel ☐ MS power point ☐ Epi-info

9. Did you analyze data of the surveillance system? ☐ Yes ☐ No

10. If answer for Q9 is yes, did you describe data by, ☐ time ☐ place ☐ person

11. Did you have denominators for data analysis? ☐ Total population ☐ male ☐ female ☐ under five

12. Please indicate the frequency of your data analysis. ☐ Weekly ☐ every two week ☐ Monthly ☐ quarterly ☐every 6 month ☐ annually ☐ No regular time

13. Did you notify the results of your analysis to the higher level PHEM? ☐ Yes ☐ No

14. Did you notify the results of your analysis to the lower level PHEM? ☐ Yes ☐ No

15. If answer for Q9 is No, what is the reason? ☐ lack of knowledge ☐ shortage of time do you to work load ☐ less attention given to data analysis ☐ shortage of materials ☐ analysis is not familiar activity in place ☐ negligence ☐ Other-----------------------------------------------

**D. Epidemic response and preparedness assessment**

1. Did you have plan for epidemic response and preparedness? ☐ Yes ☐ No

2. Did you have emergency stocks of drugs and supplies? ☐ Yes ☐ No

3. If answer for Q2 is No, how did you control epidemics? --------------------------------------------
------ ----------------------------------------------------------------------------------------------------

4. Had you experienced shortage of drugs, vaccines and supplies in 2008 EFY? ☐ Yes ☐ No

5. Was an epidemic management committee built in your office? ☐ Yes ☐ No ☐ Not Applicable

6. Did the epidemic management committee have regularly scheduled meeting time? ☐ Yes ☐ No 7. Was Rapid response team built in your office? ☐ Yes ☐ No ☐ Not Applicable

8. Did the Rapid response team have regularly scheduled meeting time during epidemics?
☐ Yes ☐ No

9. Did you have case management protocol for epidemic prone diseases? ☐ Yes ☐ No ☐ Not Applicable

10. Did your PHEM have multi sect oral emergency preparedness and response task force?
☐ Yes ☐ No ☐ Not Applicable

11. In what frequency did the task force meet during outbreaks? --------------------------------------------- -------------------------------------------------------------------------------------------------------

12. Were partners working together with your office on emergencies? ☐ Yes ☐ No 13. If answer for Q12 is yes, what type of supports did they give to your office? -------------------------- ---------------------------------------------------------------------------------------------------

14. Was there a budget for epidemic response? ☐ Yes ☐ No

15. Who had the authority to mobilize the emergency finance? ☐Woreda head ☐ woreda health department ☐ experts ☐ other------------------------------------------------------------------------

16. Had you a car assigned for emergencies (PHEM)? ☐ Yes ☐ No ☐ Not functional

17. If answer for Q16 is NO, how did you address emergencies? --------------------------------------------- -------------------------------------------------------------------------------------------------------

18. Had you faced any Challenges on epidemic response and preparedness in 2008 EFY? ☐ Yes ☐ No

19. If answer for Q18 is yes, a) list the challenges------------------------------------------------------- -------- -------------------------------------------------------------------------------------------------------- ----------- -------------------------b) what measures did you take to tackle the challenges?------------ ------------------------------------------------------- -------------------------------------------------- --------------------------------------------------------- ------------------------------------------------

**E. Outbreak investigation and case confirmation assessment**

1. Had you investigated any outbreak in 2007 EFY? ☐ Yes ☐ No

2. Did you have outbreak investigation check list? ☐ Yes ☐ No

3. If answer for Q2 is No, how did you know possible factors for the outbreak? --------------------- -------------------------------------------------------------------------------------------------

4. Where was laboratory confirmation of cases done? ☐ Regional laboratory ☐ Hospital ☐ EHNRI ☐ health center ☐ contracted private laboratory ☐ other----------------------

5. Who was responsible to investigate an outbreak? ☐ Rapid response team ☐ HEWs ☐ staffs of woreda health office ☐ experts organized randomly ☐ health facility staffs ☐ other----------------------------------------------------

6. If answer for Q1 is yes how many out breaks did you investigated in 2008 EFY? -----------

7. Had you faced any challenge in outbreak investigation in 2003 EFY? ☐ Yes ☐ No 8. If answer for Q7 is yes, a) list the challenges-------------------------------------------------------------- ---- ------------------------------------- b) list the alternatives that you take to tackle the challenges. ---- ----------------------------------------- -------------------------------------------------------------------- -------------------------------------------- ----------------------------------------------------------------- -

**F. Supervision and feedback assessment**

1. Did you have supervision plan in 2008 EFY? ☐ Yes ☐ No

2. If answer for Q1 is No, how did you supervise? ------------------------------------------------------- ------- ------------------------------------------------------------------------------------------------------

3. If answer for Q1 is yes, did you supervise the health centers (HCS) and health posts (HPs) according to your plan in 2008 EFY? ☐ Yes ☐ No

4. If answer for Q3 is No, what is the reason? ------------------------------------------------------------ ------ -------------------------------------------------------------------------------------------------------

5. If answer for Q3 is yes, how many times did you supervise each health center (HC) and health post (HP) in 2008 EFY? Health center------------ health post----------------

6. Had you reviewed about surveillance practice by higher level supervision? ☐ Yes ☐ No

7. Did you have regular supervision checklist? ☐ Yes ☐ No

8. If answer for Q7 is No, how did you supervise the woredas and health facilities? ---------------- ------ -------------------------------------------------------------------------------------------------------

9. Were you supervised by higher level officers in 2008 EFY? ☐ Yes ☐ No

10. If answer for Q9 is yes how many times in 2008 EFY? -------------------------

11. Did you send feedback of your supervision to the health centers (HCS) and health posts (HPs) commenting/indicating their strong and weak sides? ☐ Yes ☐ No

12. If answer for Q11 is No, why? ----------------------------------------------------------------------- -------- -----------------------------------------------------------------------------------------------------

13. If answer for Q11 is yes, for how many HCs and HPs did you send a feedback in 2008 EFY? HC-- ----------- and health post--------------

14. Had you received feedback from higher level supervisors in 2008 EFY? ☐ Yes ☐ No

15. If answer for Q14 is yes how many feedbacks did you received in 2008 EFY? -----------------

16. Had you faced any challenge on supervision and feedback in 2008 EFY? ☐ Yes ☐ No

17. If answer for Q16 is yes a) list the challenges.---------------------------------------------------------
------- ----------------------------------------------------------------------------------------------------
---------- ------------------------ b) list the measures that you take to tackle the challenges.-----------
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**Questionnaires for Health facilities**

**A. Communication and reporting assessment**

1. Which communication material did you have? ☐ E-mail ☐ wired phone ☐ mobile ☐ radio ☐ fax ☐ other------------------------------------------

2. Did you have address of Zonal/woreda PHEM officers? ☐ Yes ☐ No

3. How frequently are you communicating with the Zonal/woreda PHEM officers on emergencies and other daily activities? ☐ Daily ☐ weekly ☐ every 2 week ☐ monthly ☐ quarterly ☐ every 6 month ☐ yearly ☐ others------------------------------------------

4. When are you expected to send weekly report to the Zonal/woreda PHEM unit? ☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday

5. How is your facility communicating the Zonal/woreda PHEM officers in case of immediately reportable diseases? ☐ By e-mail ☐ by phone ☐ by fax ☐ regular weekly report ☐ others---- --- ------------------------------ 6. Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system? ☐ Yes ☐No

7. If answer for Q6 is yes, to whom did you send? ----------------------------------------------------
-- ----------------------------------------------------------------------------------------------

8. If you faced any problems on communicating and reporting, list them------------------------------
- -----------------------------------------------------------------------------------------------------

9. Mention the alternative solutions that you take to tackle the problems you above? ---------------
- ----------------------------------------------------------------------------------------------------
--------------------------------------------------------------------------------------

**B. Assessment of availability of Surveillance Documentation, Registers, and Forms**

1. Did you have National Guide line for PHEM? ☐ Yes ☐ No ☐ Not Applicable

2. Did you have standard case definition for all country priority diseases? ☐ Yes ☐ No ☐ Not Applicable

3. Was the case definition posted? ☐ Yes ☐ No

4. If answer for Q2 is No, for which disease(s) did you lack the case definition? -------------------- ----------------------------------------------------------------------------------------------------------

5. Did you have case reporting formats for out breaks? ☐ Yes ☐ No ☐ Not Applicable

6. Was there national manual for surveillance? ☐ Yes ☐ No ☐ Not Applicable

7. Was there guide line for specimen collection, handling and transportation to the next level? ☐ Yes ☐ No ☐ Not Applicable

8. Did you have line list for reporting outbreaks? ☐ Yes ☐ No ☐ Not Applicable

9. Was there a clinical register/logbook in your health facility? ☐ Yes ☐ No ☐ Not Applicable

10. Did you face shortage of surveillance reporting and recording formats?☐ Yes ☐ No

11. If answer foe Q10 is yes, which form? -------------------------------------------------------

**C. Data analysis, Computer skill and training assessment**

1. Had you trained on surveillance system? ☐ Yes ☐ No

2. If answer for Q1 is yes a) when---------------------? b) Topic----------------------------? c) For how long? -------------------------------------------

3. Was data compiled? ☐ Yes ☐ No

4. Did you have computer on your office? ☐ Yes ☐ No

5. Did you have computer on your department (PHEM unit)? ☐ Yes ☐ No

6. What is the data entry and compilation instrument? ☐ Manual ☐ Computer ☐ other------------ -------------------------------

7. Did you have computer skill on ☐ MS word ☐ MS excel ☐ MS power point ☐ Epi-info

8. Did you analyze data of the surveillance system? ☐ Yes ☐ No 9. If answer for Q8 is yes, did you describe data by ☐ time ☐ place ☐ person

10. Did you have denominators for data analysis? ☐ Total population ☐ male ☐ female ☐ U5

11. Please indicate the frequency of your data analysis. ☐ Weekly ☐ every two week ☐ Monthly ☐ quarterly ☐every 6 month ☐ annually ☐ No regular time

12. Did you notify the results of your analysis to the higher level PHEM? ☐ Yes ☐ No

13. If answer for Q8 is No, what is the reason? ☐ lack of knowledge ☐ shortage of time do you to work load ☐ less attention given to data analysis ☐ shortage of materials ☐ analysis is not

familiar activity in place ☐ negligence ☐ Other----------------------------------------------

**D. Epidemic response and preparedness assessment**

1. Did you have plan for epidemic response and preparedness? ☐ Yes ☐ No

2. Did you have emergency stocks of drugs and supplies? ☐ Yes ☐ No

3. If answer for Q2 is No, how did you control epidemics? --------------------------------------------
-- ------------------------------------------------------------------------------------------------

4. Had you experienced shortage of drugs, vaccines and supplies in 2003 EFY? ☐ Yes ☐ No

5. Was an epidemic management committee built in your facility? ☐ Yes ☐ No ☐ Not Applicable

6. Did the epidemic management committee have regularly scheduled meeting time? ☐ Yes ☐ No

7. Was Rapid response team built in your office? ☐ Yes ☐ No ☐ Not Applicable

8. Did the Rapid response team have regularly scheduled meeting time during epidemics? ☐ Yes ☐ No

9. Did you have case management protocol for epidemic prone diseases? ☐ Yes ☐ No ☐ Not Applicable

10. Did your PHEM have multi sectorial emergency preparedness and response task force? ☐ Yes ☐ No ☐ Not Applicable

11. In what frequency did the task force meet during outbreaks? -------------------------------------
---- ---------------------------------------------------------------------------------------------------

12. Were partners working together with your office on emergencies? ☐ Yes ☐ No

13. If answer for Q12 is yes, what type of supports did they give to your office? --------------------

14. Was there a budget for epidemic response? ☐ Yes ☐ No

15. Who had the authority to mobilize the emergency finance? ☐Zonal/woreda head ☐ Zonal/woreda health department ☐ experts ☐ other-------------------------------------------------- ---

16. Had you faced any Challenges on epidemic response and preparedness in 2008 EFY? ☐ Yes ☐ No 17. If answer for Q16 is yes, a) list the challenges-----------------------------------------------
---------- ----------------------------------------------------------------------------------------------------
--------- -----------------------------------------b) what measures did you take to tackle the challenges? ----------------------------------------------------------------------------------------------------

**E. Outbreak investigation and case confirmation assessment**

1. Had you investigated any outbreak in 2008 EFY? ☐ Yes ☐ No
2. Did you have outbreak investigation check list? ☐ Yes ☐ No
3. If answer for Q2 is No, how did you know possible factors for the outbreak? --------------------
- ------------------------------------------------------------------------------------------------
4. Where was laboratory confirmation of cases done? ☐ Regional laboratory ☐ Hospital ☐ EHNRI ☐ health center ☐ contracted private laboratory ☐ other----------------------
5. Who was responsible to investigate an outbreak? ☐ Rapid response team ☐ HEW ☐ staffs of woreda health office ☐ experts organized randomly ☐ health facility staffs ☐ other----------------------------------------------------
6. If answer for Q1 is yes how many out breaks did you investigated in 2008 EFY
7. Had you faced any challenge in outbreak investigation in 2008 EFY? ☐ Yes ☐ No
8. If answer for Q7 is yes, a) list the challenges---------------------------------------------------------
-- ----------------------------------------------------------------------------------------------------------
b) list the alternatives that you take to tackle the challenges. -------------------------------------------
--- -------------------------------------------------------------------------------------------------------

**F. Supervision and feedback assessment**

1. Had you reviewed about surveillance practice by higher level supervision? ☐ Yes ☐ No
2. Were you supervised by higher level (regional) officers in 2008 EFY? ☐ Yes ☐ No
3. If answer for Q2 is yes, how many times in 2008 EFY? ------------------------
4. Had you received feedback from higher level supervisors in 2008 EFY? ☐ Yes ☐ No
5. If answer for Q4 is yes, how many feedbacks did you received in 2008 EFY? -------------
6. Had you faced any challenge on supervision and feedback in 2008 EFY? ☐ Yes ☐ No
7. If answer for Q6 is yes a) list the challenges.------------------------------------------------------------
----- ---------------------------------------------------------------------------------------------------------
-------- b) list the measures that you take to tackle the challenges.--------------------------------------
----------- ----------------------------------------------------------------------------------------------

**Questionnaires for Health post**

**A. Communication and reporting assessment**

1. Which communication material did you have? ☐ E-mail ☐ wired phone ☐ mobile ☐ radio ☐ fax ☐ other------------------------------------------
2. Did you have address of woreda PHEM officers? ☐ Yes ☐ No

3. How frequently are you communicating with the woreda PHEM officers on emergencies and other daily activities?

☐ Daily ☐ weekly ☐ every 2 week ☐ quarterly ☐ every 6 month ☐ yearly ☐ others-----------

4 When are you expected to send weekly report to the woreda PHEM unit? ☐ Monday ☐ Tuesday

☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday

5. How are you communicating the woreda PHEM officers in case of immediately reportable diseases? ☐ By e-mail ☐ by phone ☐ by fax ☐ regular weekly report ☐ others--------------------- ---------------------------------------6. If you faced any problems on communicating and reporting, list them--------------------------------- -------------------------------------------------------------------

7. Mention the alternative solutions that you take to tackle the problems you above? -------------- ----- ---------------------------------------------------------------------------------------------------------

**B. Assessment of availability of Surveillance Documentation, Registers, and Forms**

1. Was there national manual for surveillance? ☐ Yes ☐ No ☐ Not Applicable

2. Did you have standard case definition for all country priority diseases? ☐ Yes ☐ No ☐ Not Applicable

3. Was the case definition posted? ☐ Yes ☐ No

4. If answer for Q2 is No, for which disease(s) did you lack the case definition? ------------------ - ---------------------------------------------------------------------------------------------------- -------

5. Did you have case reporting formats for out breaks?☐Yes ☐ No ☐ Not Applicable

6. Was there guide line for specimen collection, handling and transportation to the next level? ☐ Yes ☐ No ☐ Not Applicable

7. Had you line list for reporting outbreaks? ☐ Yes ☐ No ☐ Not Applicable

8. Was there a clinical register/logbook in your health facility? ☐ Yes ☐ No ☐ Not Applicable

9. Did you face shortage of surveillance reporting and recording formats?☐ Yes ☐ No

10. If answer foe Q9 is yes, which form? ------------------------------------------------

**C. Data analysis and training assessment**

1. Had you trained on surveillance system? ☐ Yes ☐ No

2. If answer for Q1 is yes a) when---------------------? b) Topic----------------------------? c) For how long? -------------------------------------------

3. Did you analyze data? ☐ Yes ☐ No

**D. Outbreak investigation and case confirmation assessment**

1. Was there any outbreak in your Kebele in 2008 EFY? ☐ Yes ☐ No

2. If your answer for Q1 is yes, what did you do? ☐ Reported to the woreda PHEM ☐ reported to administrative leaders ☐ we investigated ☐ cases referred to health center/hospital ☐ other------------------------------------------------------------------------

3. Where was laboratory confirmation of cases done? ☐ Regional laboratory ☐ Hospital ☐ EHNRI ☐ health center ☐ contracted private laboratory ☐ other----------------------

4. Who was responsible to investigate an outbreak? ☐ Woreda health office PHEM

5. If answer for Q1 is yes how many out breaks were occurred in your Kebele in 2008 EFY? ----------------------

6. Had you faced any challenge in outbreak investigation in 2008 EFY? ☐ Yes ☐ No

7. If answer for Q6 is yes, a) list the challenges--------------------------------------------------------- -- -------------------------------------------------------------------------------------------------------------- - -------------------------------------------------------

b) List the alternatives that you take to tackle the challenges ------------------------------------------- --- -------------------------------------------------------------------------------------------------------------- ------ -----------------------------------------------------------------------------------------------

**F. Supervision and feedback assessment**

1. Had you reviewed about surveillance practice by higher level supervision? ☐ Yes ☐ No

2. Were you supervised by higher level (regional) officers in 2008 EFY? ☐ Yes ☐ No

3. If answer for Q2 is yes how many times in 2008 EFY? -------------------------

4. Had you received feedback from higher level supervisors in 2008 EFY? ☐ Yes ☐ No

5. If answer for Q4 is yes how many feedbacks did you received in 2008 EFY? -----------

## Chapter IV – Health Profile Description Report

### Health Profile Description of Gonji Kolela Woreda, West Gojjam Zone, Amhara Region Ethiopia, 2015

**Abstract**

**Background:** Health profile description is system of collecting and summarizing health and health related events, demographic, socio-economic, political and cultural aspect of a particular district. It is essential tool for change and thus must be a core element of local decision-making and strategic planning processes. The preparation of a profile provides a lively, scientifically and evidence based account of health in the district. Health profile description was conducted in Gonji Kolela Woreda of Amhara region to understand overall health and health related events, mainly performed in 2006 E.C.

**Methods:** Cross sectional descriptive study design was used. Interview and standard check list were the main tools used to collect the district health profile from district health office, district administrate office, agriculture office, education office and other offices. Data was compiled and analyzed manually and using Microsoft Excel.

**Result:** Gonji Kolela district has 24 rural and 1 urban Kebele. The administrative center of the district is Addis Alem town. Based on the 2014 population estimate a total population of woredas were 121,447 of whom 50.3% were males and 49.7% were females. About 95% of woreda populations live in rural area and on agriculture economy. In the Woreda from 25 kebeles, only 8 kebeles of the district has no road access and only six kebeles have electric power supply. In addition the woreda drinking water services coverage has reach 81%. Gonji Kolela district had 45 primary first cycle schools (grade 1-8), one high school (grade 9-10) and one Preparatory school (grade 11-12).in the woreda most of time dropout rate is high in primary school than other. The woreda had 6 heath centers, 26 heath posts, 81 vaccine centers, 6 private clinical centers and one private drug store. Furthermore, one health center and one heath post were serving for 19913 and 4595 population respectively. 1$^{st}$ visit ANC, PNC, delivery and contraceptive coverage rate was 82.8%, 80.7%, 54.9%, 98.4% respectively. measles immunization coverage was 105%and Penta3 coverage was110%.Gonji Kolela district had a total of 5222 household in 2014, 81% of household have latrine and 70% of household were using latrine and there were 15 ODF kebeles in the woreda. From 10 top diseases seen in 2014,

Pneumonia 13.5% was leading problem in adults and in fewer than five children Diarrhea 79% was leading problem. In 2014/2015 a total of 2776 malaria case were diagnosed and treated. According to one year‟s reports from 18454 clients were screened for HIV, of these 46 were positive. On the other hand 20 smear positive TB cases were detected with detection rate of 29%. **Conclusion and Recommendation:** Pneumonia was the leading cause of morbidity and major health problem in adults other than in children under the age of five in this case diarrhea was the major problem. TB smear positive case detection rate was worse compare to WHO case detection rate standard. In the district the overall performance was higher than WHO set EPI coverage target even the dropout rate of penta1 to penta3 and penta3 to measles were less than 10%, it is acceptable range. On the other hand PNC coverage, contraceptive acceptance rate and skilled delivery were good compared to national 2013 performance rate. In contrast 1st ANC visits services were less than national 2013 annual performance rate.

# Complied Body Works

## Introduction

Health profile is a system of collecting and summarizing health and health related events, demographic, socio-economic, political and cultural aspect of a particular district. Briefing and evaluating health and health related data of a district is also important to prioritize problems and plan on identified gaps (1). It is program to improve availability and accessibility for health and health related information in Gonji Kolela District and these profiles gives overview of health for each Kebele and Village .Most of the time health profile produced annually.

The Health profile provides a brief description of Gonji Kolela District catchment area and Key demographic & population characteristics such as how many people live in the local government area, languages spoken, income, and socioeconomic status, a range of selected indicator of health status, health service utilization and also availability. As we know, the health profile description highlights several important aspects of public health data. Data will be collected, analyzed, and disseminated for decisions on the best information available. Demographic, infrastructure of the district, socio-economic, primary health care coverage, vital statistics and other data will be collected and to address important public health problems and to facilitate effective public health actions. District health data are important for advocacy, program planning, implementation and evaluation of health care most importantly, at the district level. Based on the decentralization structure of Ethiopia, districts are the basic units of planning, decision making, and political administration.

The primary objective of this health profile are to provide a broad over view of the social, economic, demographic and geographic health status of the population of Gonji Kolela District. In the previous time in Gonji Kolela District health profile description was not prepared and the health status of the District was not documented in organized way. Therefore, this study was conducted to prepare health profile of Gonji Kolela District and to identify the major problems of the District on health system.

## Rational of the study

Health profile are designed to give an easily accessible snapshot picture of the community„s health an also describing health profile is helpful to understand the current health of population and of the many aspects of the community„s life that influence it. Generally, the data generated from the health profile description project will help districts, and other stakeholders for public health decision making, resource allocation and priority setting.

## Complied Body Works

**Objectives**

**General Objectives**

To assess and describe health and health related issue and to identify problem for priority setting of Gonji Kolela District, West Gojjam, March 2015.

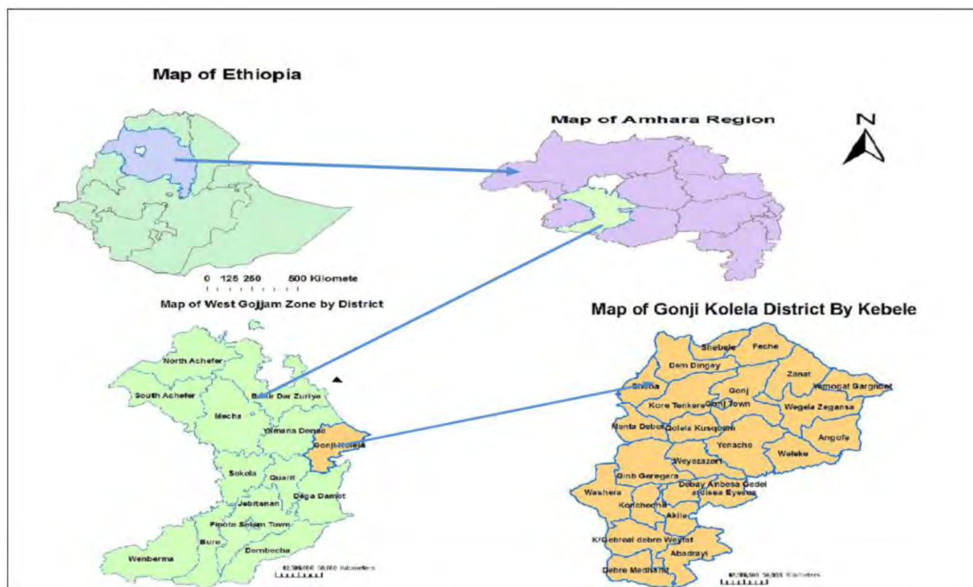
**Specific Objectives**

- To assess and describe health indicator
- To identify the health service status of Gonji Kolela district
- To assess human resources of district health offices
- To describe existing health infrastructure of district
- To identify major health problem observed in the health care system
- To describe endemic diseases

**Method and Materials**

**Study area**

This health profile description was done in Gonji Kolela district. It is one of the 18 districts in west Gojjam zone which is found in Amhara regional state. Gonji Kolela district was established as district in 1999 E.C, it is one of recent District in Amhara region, west Gojjam zone. The district established with 1 urban and 24 rural Kebeles and according to 2015 population estimation a total of 121447 populations in which females 61133 and male 60314 almost 1:1 ratios.




**Map 4:** Map of Gonji Kolela district, West Gojjam zone, Amhara region, Ethiopia, 2015

# Complied Body Works

**Study Design:** Distributive Cross Sectional study was conducted in Gonji Kolela district

**Data collection:** Data was collected from Gonji Kolela district health office and other sector like Administration office, Agriculture office, water sector, district finance, Tourism office and other by using standard questioner, interview different concerned individual, personal observation and review available data and report.

**Data Analysis:** Data was analyzed using Microsoft Offices Excel. Graphs and tables are used to present results.

**Result**

**Historical Back ground & culture**

The background of the name of Gonji Kolela district has strong relation with the orthodox Christian religion. The name was given a man called Aba Girma; he is monk and his prayer in the Kidane mihret and Michale church every day and night, one day saint Mary shows to him and said that " this place have very heave wind don"t put me here put me to the side " which means " gone enjie" in raw Amharic. Form that time on the place was called "Gonji "this story was based on historical myths.

**Geography and Climate**

Gonji Kolela district is one of the district of West Gojjam zone, Amhara region and located 61.8km from Regional town Bahir Dar & 9.6km on the main Road to Addis Ababa. From the North direction the district is bordered by Dera district, from east direction by Hulet juensie, from south direction by Dega Damot & Qurite district and from West Direction Yelmana Densa district with a total area of 662.23km$^2$ which accounts for 4.85% of the total area west Gojjam zone.(3) It was situated at altitude of 1500 – 3005asl above sea level with11$^{o}$ 15"51, 36$^{o}$N latitude and 37$^{o}$29"31,72$^{o}$Elongitude. The mean annual rainfall was 1403.36mm (1221-1602mm) and average annual temperature with the range of 13$^{0}$c to 21$^{0}$c.It has an area of 64864 hectare/sq km .Climatically district falls into three climatic zones known as "Dega", "Woina dega" and "Kolla".

**Administrative and Political Structure**

Gonji Kolela district has 24 rural and 1 urban kebeles. The administrative center of the district is Addis Alem town. The district has its own council and representative in Federal parliament and also the ruling political party in the district is Amhara National Democratic Movement (ANDM).

There are 8 supporting NGO working together with district health office explicitly Intra-health, carter, UNICEF, FINLAND, WHO, MSH, IPAS and Marry stop.

**Demographic Information**

Based on the 2014/2015 population estimate for this district has a total population of 121447 of whom 61133(50.3%) are males and 60314 (49.7%) are females. When we see males to female‟s sex ratio accounts (50.3%) are males & (49.7%) are females and it is 1:1 ratio. Only 5951 (4.9%) of district population live in urban area (see other vital statistics are listed in table 19).Religion composition of the district is Christian Orthodox 99.4%, Muslim 0.6%, protestant 0.01% and other 0.008%. the predominant ethnic group in the district is Amhara. From these total population children under 15 years age constituted 36.3% , 3.6% of population were old people >65 years and 58.6% of population were age group 15-49 years, so dependency ratio of the district is 68%. Women under reproductive group (15-49) consisted 27%.

**Table 21:** Population distribution by kebeles from 2014/2015 population estimate and kilometer from district town Gonji Kolela, West Gojjam, Ethiopian

| Seri No | Name of Kebele | Male | Female | Total population | Kilometer from Addis Alem |
|---|---|---|---|---|---|
| **1** | Addis Alem | 3069 | 2883 | 5951 | Town |
| **2** | Dem Dengay | 2630 | 2646 | 5277 | 28km |
| **3** | Shebelie | 838 | 875 | 1713 | 33km |
| **4** | Fich | 1367 | 1307 | 2673 | 38km |
| **5** | Zanat | 2066 | 1969 | 4034 | 15km |
| **6** | Garginbet | 1382 | 1407 | 2789 | 20km |
| **7** | Zegansa | 2367 | 2420 | 4786 | 11km |
| **8** | Angofie | 1441 | 1348 | 2789 | 20km |
| **9** | Welekie | 1527 | 1501 | 3027 | 39km |
| **10** | Yinach | 4714 | 4425 | 9139 | 8km |
| **11** | Gonji Zuria | 2659 | 2496 | 5155 | 3km |
| **12** | Korie | 4314 | 4303 | 8616 | 10km |
| **13** | Sheba | 2121 | 2144 | 4265 | 13km |

| 14 | Menta Debir | 2397 | 2311 | 4708 | 10km |
|---|---|---|---|---|---|
| 15 | Qolela Qusquam | 2621 | 2572 | 5193 | 6km |
| 16 | Weyzazirt | 2567 | 2554 | 5121 | 11km |
| 17 | Ardesa | 1858 | 1848 | 3706 | 48km |
| 18 | Debay | 1390 | 1361 | 2751 | 42km |
| 19 | Aqile | 1836 | 1811 | 3646 | 42km |
| 20 | Kenchechil | 1479 | 1514 | 2994 | 39km |
| 21 | Ginb Geregera | 4251 | 4173 | 8424 | 16km |
| 22 | Washera | 4247 | 4395 | 8642 | 34km |
| 23 | Kidus Gebreal | 2854 | 2875 | 5729 | 43km |
| 24 | Abedray | 3149 | 3133 | 6282 | 48km |
| 25 | Debre Medhanit | 1990 | 2043 | 4033 | 50km |
| **Total population** | | 61133 | 60314 | 121447 | |

**Infrastructure and Facility**

The district has 1 urban Kebele and 24 rural kebeles, from these 25 kebeles only eight kebeles of the district has no road access the rest of all have radius road.100% of the district Kebeles were accessed with wireless telecommunication and only the town was accessed with cable based telephone services. Only six kebeles have electric power supply. On the other hand the district town, Gonji Kolela has 24 hours electric supply, mobile and cable based telecommunication system, Bank (commercial Bank of Ethiopian open in 2014) and postal services. In district all kinds of energy sources were used such as electricity, solar energy, charcoal, animal dug and fire wood etc. In rural and urban the dominant sources of energy for cooking and other purpose are still traditional one. The main sources of water supply for the district exist spring and ground water. According to water source office the rural kebeles drinking water coverage is 96% and urban Kebele was 25%. Generally the district drink water services coverage was reach 81%.The district have 651 ground water supply and 59 spring water supply.

**Education**

In Gonji Kolela district had 45 primary first cycle school (grade 1-8), 1 high school (grade 9-10) and one preparatory school (grade11-12). In the district there was no Technical and Vocational education training school (TVET) or College. Primary schools had total student population of 26697, with 47 %( 12562) females .In high school there were 1782 students with 49 %( 875) females and preparatory school 507 students with 44 %( 222) females. In the district most of the time dropout rate is high in primary school than others. On the other hand females students were drop their class than male‟s students. Most of the time students drop their class in Gonji Kolela district by different reason. Some of the reason had to support family, marriage, migration to abroad, got a job (could not work at the sometime), illness, death, failing school, discipline and did not like school. Detail information on dropout rate is present as follow in table 23.

**Table 22**: No of students drop out their class by Sex and grade in Gonji Kolela district, 2014/2015

| Sir No | Grade | Male | | Female | | Total | |
|---|---|---|---|---|---|---|---|
| | | No | % from total males | No | % from total females | No | % |
| **1** | 1-8 | 90 | 63% | 128 | 73% | 218 | 69% |
| **2** | 9-10 | 32 | 23% | 26 | 15% | 58 | 18% |
| **3** | 11-12 | 20 | 14% | 20 | 12% | 40 | 13% |
| **Total** | | 142 | 100% | 174 | 100% | 316 | 100% |

The district provides primary education by 377 males and 258 female‟s teachers and when we see the teacher student‟s ratio there was 1:42. In high school there were 51 males and 18 female‟s teachers, teacher students ratio was 1:23.In preparatory school there were 25 males and 1 female teacher.21 (45%) of schools have water supply in their compound and all schools have common latrine (both sex). 31(69%) of schools have HIV/other health clubs.

**Productivity and income**

About 95% of the district populations live in rural area and on Agriculture economy since the district has fertile land which is suitable for agriculture. District productivity of the land per hectare was 34336. Maize, Teff, Wheat, Onion, Degussa are major stable food/crops in the district. In addition, these animal productions were common practice beside crop production. When we see, the gross domestic production (GDP) in Meher season (during harvesting season)

1195448 quintals, 322084 quintals from Irrigation (dry season). The productivity of the land per hectare was 41 quintals for Maize, 28 quintals for Teff (common products) and wheat, 23 quintals for Degussa, 94 quintals for Onion. The total GDP of the district for 2014/2015 was 1517531 quintals (total production).Main source of income in the district is agriculture and the number of population committed in agriculture were 20175, Government employee were 1646, Trade 1342, the rest 98284 inhabitants are dependent on different and unspecified job.

**District health system**

**Organo-gram**

Executive District health officer (EDHO) heads the health care delivery network. The EDHO is assisted by Assistant District health officer, health promote and prevention core process, heath and health related cases team, public health emergency case team and training case team etc… with in this there is subdivision. The organizational structure of Gonji Kolela district health department is given below figure

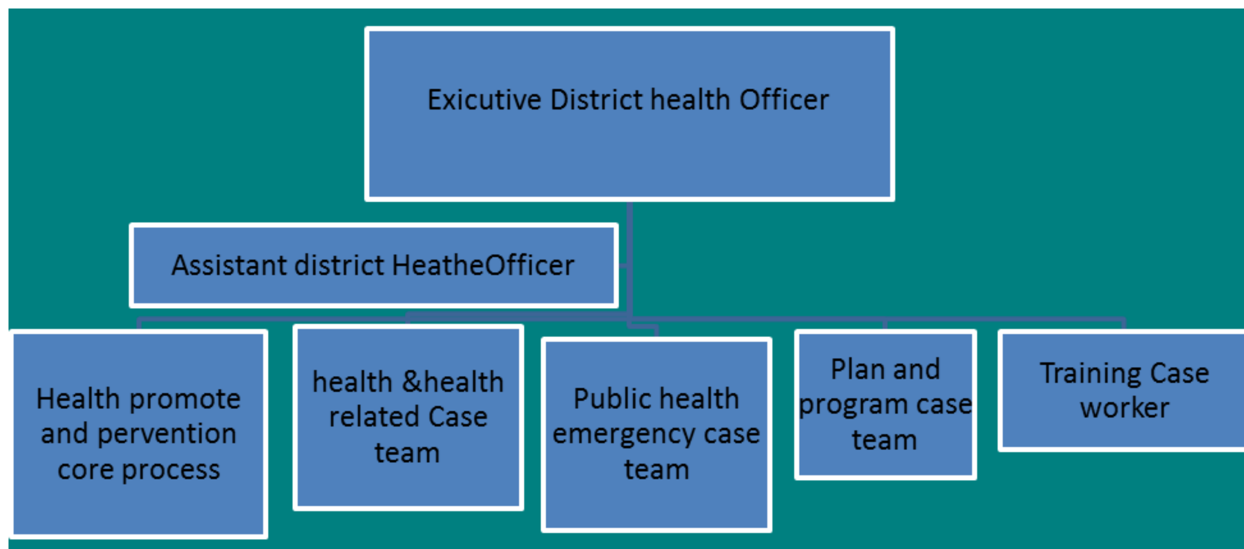



**Figure 22** : organogram of Gonji Kolela woreda, west Gojjam zone, Amhara region, 2014

**Health services**

The district had six government health center, 26 health posts and 81 vaccine centers .All health center, health post and vaccine center were functional and there were 6 private clinical centers and 1 private drug store in district. In Ethiopian recently implement BPR of the health sector has introduced a three-tier health care delivery system, level one is district health system comprised a primary hospital( to cover 60,000-100,000 people), health centers (1/15,000-25,000) and health

posts(1/3,000-5,000 population) connected to each other by a referral system(2). Distribution of health facility is shown in table 23.

**Table 23:** Type &No of health facility in Gonji Kolela district, Amhara region 2014/2015

| Sir No | Type of health facility | No | Ratio |
|---|---|---|---|
| **1** | Primary hospital | 0 | |
| **2** | Health center | 6 | 1:19,913 |
| **3** | Health post | 26 | 1:4,595 |
| **4** | Private clinics | 5 | 1:3,028 |
| **5** | Pharmacy | 0 | |
| **6** | Rural drug venders | 1 | 1:4620 |
| **7** | Diagnostic laboratories | 0 | |
| **8** | Total | 38 | |

In 2014 a total of 188 health professional and support staff were employed and working at different level of health system .Information regarding number of health professionals and other administrative staffs present in table 25 as follow

**Table 24:** No of health professional and administrative staffs employed in Gonji Kolela district, Amhara region 2014/2015

| Sir No | Type of profession | No of professionals | | |
|---|---|---|---|---|
| | | Male | Female | Total |
| **1** | Health officer | 9 | 1 | 10 |
| **2** | Nurses(Degree & Diploma) | 6 | 7 | 13 |
| **3** | Midwifery(Degree& Diploma) | 6 | 9 | 15 |
| **4** | Laboratory technologies technicians | 11 | 2 | 13 |
| **5** | Pharmacy technicians/pharmacist | 6 | 7 | 13 |
| **6** | Environmental health | 2 | 0 | 2 |
| **7** | Health information technologist (HIT) | 5 | 2 | 7 |
| **8** | Health extension worker (HEW) | 0 | 42 | 42 |
| | Other | 31 | 25 | 56 |
| **Total** | | 76 | 95 | 171 |

**Table 25:** Ratio of health facility and professional to population in Gonji Kolela District Amhara 2014/2015

| Sir No | Description | No of health facilities & professionals | Ratio | |
|---|---|---|---|---|
| | | | WHO standard | Gonji Kolela district |
| **1** | Health center: population | 6 | 1:25,000 | 1:19913 |
| **2** | Health post: population | 26 | 1:5000 | 1:4595 |
| **3** | Health officer: population | 10 | 1:10,000 | 1:66590 |
| **4** | Nurse: population | 13 | 1:5,000 | 1:75702 |
| **5** | Midwife: population | 15 | 1:5,000 | 1:95226 |
| **6** | HEW: population | 42 | 1:2,500 | 1:5000 |

**Health budget allocation**

The total budget for the district was 51,142,618 ETH birr from this budget allocate for district heath office including health facility was 6,679,703 in ETH birr in 2014. In the district UNCF, WHO, Global fund support the district health office for the implementation of different program. The district witness a gradual rise in budget allocation in health sector each year since 2009-10 as shown in figure 27.

**Figure 23:** Comparison of total district budgets with health sector budget (RS, in millions) in Gonji Kolela woreda, West Gojjam zone, Amhara region, Ethiopian, 2014/2015

**Essential drugs and other supplies**

According to the district health office in 2014/2015 from 6679703 of health budget, only 435,000 ETH birr has allocated for drug and medical supplies. The district offices reported there was shortage of essential drug supply and diagnostic"s kits in the district and it is not easy to get in the market to obtain

**Vital statistics and health indicator**

**Table 26:** Distribution of population groups and vital statistics in Gonji Kolela district, west Gojjam zone, Amhara region 2014/2015

| Sir No | Parameter | Number (%) |
|---|---|---|
| 1 | Total population | 121447 (100) |
| 2 | Male | 61133 (50.3) |
| 3 | Female | 60314 (49.7) |
| 4 | Under 1 years old | 3777 ( 3.1) |
| 5 | Under 5 years old | 16,444 |
| 6 | Urban | 5951(4.9) |
| 7 | Rural | 115,496 |
| 8 | Female 15 – 49 years old | 32,790 (27) |
| 9 | Pregnancy | 4093 (3.4) |
| 10 | Live birth | 3777(3.1) |
| 11 | Non pregnant women | 24,569 (21) |
| 12 | Average house hold size | 5,222 (4.3) |
| 13 | Dependency ratio | 82584 (68) |
| 14 | Infant mortality ratio/1000 | No data |
| 15 | Under 5 mortality ratio/1000 | No data |
| 16 | Crude birth rate/1000/year | 34 |
| 17 | Crude death rate/1000/year | No data |

**Immunization coverage**

Immunization coverage is a key measure of immunization system performance (3). At Gonji Kolela district level the dropout rate from Penta $_1$ to Penta $_2$ was 2.3 % and from Penta $_1$ to measles was 4.6%.

**Table 27:** Immunization coverage by type of antigen in Gonji Kolela district, West Gojjam zone, Amhara region, 2014/2015

| Sir No | Immunization | Percent(%) |
|---|---|---|
| **1** | BCG | 100 |
| **2** | Penta1 | 107 |
| **3** | Penta3 | 110 |
| **4** | OPV0 | 100 |
| **5** | OPV1 | 110 |
| **6** | OPV3 | 107 |
| **7** | Measles | 105 |
| **8** | Fully | 105 |
| **9** | PCV1 | 110 |
| **10** | PCV3 | 107 |

**Maternal health service coverage**

Maternal health refers to the health of women during pregnancy childbirth and the post-partum period. It is one of Ethiopian priority health programs. In 2014/2015 based on 1st time visits the ANC coverage was 82.8%, from eligible pregnant mother but the 4th times visits for ANC was 56.8%. PNC coverage was 80.7 % , proportion of skilled delivery was 54.9%, to prevent unwanted pregnancy district health office is working on reproductive health in all health post and health center, so that contraceptive acceptance rate (CAR) was 98.4%.

**Hygiene and Environmental health services**

Gonji Kolela district had total of 5222 household in 2014/2015, of these 4250 (81%) have latrine (No of house hold with latrine) and 3660 (70%) of household were using latrine (latrine utilization coverage). In addition to this, there were 15 ODF kebeles in the district. On the other hand safe water supply coverage in the district was 81%, when we see respectively in rural community 96% coverage and in urban community 25% coverage. The district water resources office is working to supply safe drinking water for the society from four type of water source but there were part of society, which uses unsafe water for drink like from river, spring, wells, etc…

**Table 28 :** Distribution of drinking water source types in Gonji Kolela district, West Gojjam zone, Amhara region 2014/2015

| Sir No | Type of drinking water sources | Number | Functional |
|---|---|---|---|
| **1** | Hand pump | 651 | 634 |
| **2** | Protected spring | 59 | 57 |
| **3** | Shallow well | 2 | 2 |
| **4** | Deep well | 2 | 1 |
| **Total** | | 714 | 694 |

**Health Education**

Health education is one strategy of health promotion and focused on helping individual learn and use health enhancing skills (4). Therefore, health education has given to the community on different topics such as EPI, ANC, FP, STD, HIV/AIDS, nutrition, hygiene and sanitation. Health education given at health facility and house to house by health care provider and health extension worker reached about 98,448people within this year.

**Top ten leading causes of outpatient visits**

In the district top ten cause of morbidity in outpatient department the most frequently occurred diseases was pneumonia , it accounts 13.35% and the other top ten causes of morbidity were specified in table 27, but there was no data about the top ten causes of mortality. On the other hand it is difficult to show top ten causes of morbidity and mortality in under five because of lack of monthly mortality and morbidity report.

**Table 29:** List of Top ten leading causes of OPD in Gonji Kolela district, West Gojjam zone, Amhara Region, 2014/2015

| Sir No | Disease | No of Case | Percent (%) | Cumulative frequency (%) |
|---|---|---|---|---|
| 1 | Pneumonia | 2575 | 13.35 | 13.3 |
| 2 | Dyspepsia | 2325 | 12.06 | 25.3 |
| 3 | Other unspecified and parasite | 2272 | 11.6 | 36.9 |
| 4 | AFI | 2228 | 11.5 | 48.4 |
| 5 | Malaria | 2063 | 10.6 | 59 |
| 6 | Acute upper respiratory tract infection | 1888 | 9.7 | 68.7 |
| 7 | Diseases of muscle of skeleton infection | 1635 | 8.4 | 77.1 |
| 8 | UTI | 1602 | 8.8 | 85.9 |
| 9 | Trauma | 1413 | 7.3 | 93.2 |
| 10 | Helmentiasis | 1293 | 6.8 | 100 |

**Table 30:** Top Ten diseases of morbidity in < 5 years OPD in Gonji Kolela district, West Gojjam zone, Amhara Region, 2014/2015

| Sir No | Disease | No of case | Percent (%) |
|---|---|---|---|
| 1 | Diarrhea ( Non bloody) | 1633 | 79.5 |
| 2 | Pneumonia | 1322 | 27.3 |
| 3 | AFI | 566 | 11.7 |
| 4 | Acute upper respiratory tract infection | 663 | 7.6 |
| 5 | Other unspecific infection and parasite diseases | 282 | 5.9 |
| 6 | Infection of skin and subcutaneous tissue | 275 | 5.7 |
| 7 | Diarrhea with dehydration | 187 | 3.8 |
| 8 | Diarrhea with bloody(dysentery) | 168 | 3.5 |
| 9 | Other unspecific diseases of GI | 143 | 3 |
| 10 | Malaria(confirmed with P. falciparum) | 106 | 2.1 |

**Endemic Diseases**

**Malaria**

In Gonji Kolela district, all 26 kebeles are malarias. Within the last year 2776 cases were diagnosed and treated with anti- malarial drugs. About 2596 (43%) adult cases were positive for malaria of which P.falciparm comprised was 1889 (49.7%), P. Vivax 842 (31.9%) and there is no mixed case. only 180 under five cases were also positive for malaria. The district health offices perform diverse action to prevent and control malaria transmissions, from this action indoor residual spray, case management, environmental management were major. In 2015 ITN were distribution to all household (100%).The last year coverage of Indoor residents spray (IRS) 92% and environment management actives was 87%.In addition to prevention measures curative service also give, to diagnosed and treated malaria RDT and microscope were using in health post and health center. Moreover, there are no cases treated clinically.

**Tuberculosis and Leprosy**

In 2014-2015 22 (28%) smear positive patient was identify and stared anti-TB drug and there was no any registered leprosy patients. On the other hand all TB patients were screened for HIV and 3 patients were positive for HIV, as a result HIV prevalence rate among TB cases was 3.3%. The following table shows tuberculosis data in Gonji District.

**Table 31:** Data about tuberculosis in Gonji Kolela District, West Gojjam zone, Amhara region, 2014-2015

| Sir No | Description | | Population No (%) |
|---|---|---|---|
| 1 | Prevalence of TB | | 90 (29%) |
| 2 | Pulmonary TB | Smear positive | 20 (17%) |
| | | Smear negative | 24 |
| 3 | Extra PTB | | 46 |
| 4 | TB detection rate | | 29% |
| 5 | TB Rx completion rate | | 95.4% |
| 6 | TB cure rate | | 95.3% |
| 7 | TB defaulter rate | | 2.2 % |
| 8 | Death on TB Rx | | 0.4% |

## Complied Body Works

### HIV /AIDS

In prevention and control measure of HIV/AIDS program counseling, testing services, condom distribution, health education and other services were given to the community(4). In Gonji Kolela district a total of 18454 people were screened for HIV.7595 tests were performed in VCT room from these 19 people were positives, 3283 tests were performed in PMTCT from these 3 people were positives, 10859 tests were performed in PIHTC from these 24 people were positives.

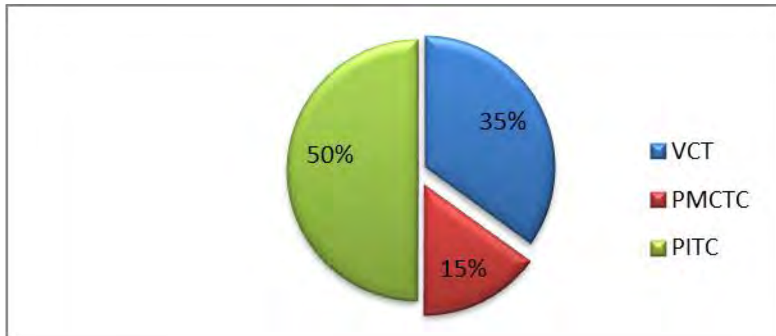



**Figure 24:** Number of HIV counseling and testing in Gonji Kolela District, West Gojjam zone, Amhara region, 2015

ART services were given in the district there were 307 people were in pre ART, 164 patients were on ART and also there are two pregnant mothers on ART. In addition there were trained health professional on VCT, so that in all health centers VCT and PIHTC services were given to community, as well as health education was given on HIV/AIDS for costumer and in health post health education was given to community by health extension workers. In Gonji Kolela district for 7522 people 58091 condoms were distributes. On the other hand when we see STI, in the district there were 116 STI patients.

### Immediately and Weekly reportable disease

At this time, there are 20 reportable priority diseases or condition in Ethiopian or 21 in Amhara region. There are 13 immediate reportable disease ( report the disease with in 30 minute to higher authority), some of these immediately diseases such as AFP, Anthrax, Avian human influenza, Cholera , Guinea worm, Measles, Neonatal tetanus, Pandemic Influenza A (H1N1), Rabies, SARS, Smallpox, VEF, Yellow fever. On other hand there are 7 weekly reportable disease or ease 8 in Amhara region .some of these are Dysentery, Malaria, Malnutrition, Meningitis, Relapsing fever, Typhoid fever, Typhus and additionally Leishmaniasis in Amhara region(5).

**Nutrition status and disasters**

In Gonji Kolela district 14661 under 5 children were screened for malnutrition, from these 7 of them were severe malnutrition, 103 moderate malnutrition, 14551 normal and also 683 pregnant screened for malnutrition, from these 41 pregnant were moderate malnutrition also 642 were normal. In 2014 there were six OTP sits in health center which give therapeutic feeding service weekly. On the other hand TFU and TSF program were working in all health center also CBN program were working at all kebeles of the district. In the last couple of years there were no disaster occurred but in February 2014 Measles outbreak was occurred and more than 4 Kebeles were affected by outbreak. Investigation was conducted by Field Epidemiology, during the epidemic time a total of 54 cases and 2 deaths were identified.

**Discussion**

In Gonji Kolela district pneumonia was the 1st top ten leading causes of outpatient visits which account 13.3%. On the reveres it was 4th place in top ten leading causes of outpatient visit in 2013 at national level (2). Following to Pneumonia dyspepsia and other unspecified diseases and parasites were most frequently occurred diseases in the district consists 12.6% and 11.06% respectively in a total health facility visits which is the highest next to pneumonia but most regions of Ethiopian in the 2nd place top ten causes of morbidity was malaria ( confirmed with P. falciparum ) which accounts 7.4(6).

In under five years children Diarrhea is the 1st leading cause of morbidity in the district which accounts 79.6% ,in addition the second leading causes of morbidity was pneumonia with 27.3% of outpatient visits and similarly it was the 1st and 2nd place in top ten disease list of 2013 at national level(2). Diarrhea and pneumonia is higher than the nationally prevalence outpatient (16.5% and 14.4% respectively) reported in 2013.

Malaria, TB/leprosy and HIV/AIDS major problems at the side of top ten diseases; they had their own impact on the community health (3). Those diseases have their prevention and control department and had their own officer for each disease in the district health officer. Malaria cases were 43% in the district which is highest from Amhara region prevalence rate (30.7%) reported in 2013. In general malaria cases were decreased from year to year since LLIN distribution to all household (100%) in 2014 and also last year coverage of IRS were 99% as well as effective environmental management activates all these activates decrease malaria case. TB smear positive case detection rate were 29% in the district and the detection rate is worse compared to regional

and national performance which was 55.6% and 58.9% respectively in 2013(2), still when compared to WHO case detection rate standard or target, it was less than 70%(7).On the other hand the HIV prevalence of the district based on the indicator of HIV/AIDS in health facility data such as VCT, PMTCT, PIHCT, ART in the district 18454 people were screened for HIV from these only 24 people were positives in 2014.

Expanded immunization program is one of preventions and control measures program performed under child health department (4). In Gonji Kolela district the overall EPI performance was higher than the WHO set EPI coverage target for control of vaccine preventable diseases. $Penta_3$ coverage (110%) was higher than regional and national performance of 2013 which was 74% and 80.4% respectively (2). In addition measles and fully immunization coverage together consists 105% it was also higher than regional and national coverage which was 76.4% and 83.2% measles and also 73.3% and 77.7% fully immunization coverage at regional and national level respectively(2). On the other hand, the dropout rate of penta1 to penta3 and penta1 to measles were less than 10% and it is in the acceptable range. Even if the immunization coverage was high (great than 100%), measles outbreak has had occurred on that year.

Reduce maternal mortality rate is one of the millennium development goal different activates such as ANC, PNC, skilled deliver activities done in all health facilities (2).82% of pregnant women in the district were taken 1st visits ANC services in 2014 and the accessibility of the services is less than regional and national performance 92% and 97% respectively compared to 2013 national report. In addition PNC coverage was 87%, it was better than regional and national performance 47.7% and 50.5% respectively compared to 2013 national report. On the other hand skilled delivery at health facility in Gonji Kolela district was 54.9% which is better than regional 17.7% and national 23.1% performance of 2013.

Infrastructure is major and key component to give quality health services to community and to get acceptance from the community. As HSDP plan, health post was constructed in each Kebele. In Gonji district one health post serve for 4495 population it meet HSDP plan related to health facility was constructed one health center to serve 5 kebeles or 25000 populations. In Gonji Kolela one health center was serve for 19913 and it meet the HSDP target. Moreover to give good services water and electric supply is must in each health center but in the district only 3 health centers have water supply and also only 2 health center had electric power. Even if, safe water supply coverage for district is 81 %; there was no strong water quality monitory this may

have contributes to higher rate of Diarrhea (13.3%) and other unspecified diseases of parasites (79.5%) in the district the first top ten morbidity cases. According to the assessment of the district at the beginning of 2014 in Gonji Kolela district one health office for 66590, one nurse for 75702, one midwife for 95226, and one health extension worker for 5000.according to WHO standard and HSDP plan relatively it is low except heath extension worker which was HO 1; 10000, NURSE 1; 5000, MIDEWIFE 1; 5000, HEW1; 2500(7).In Gonji Kolela district there was measles outbreak in February 2014 and also 151 malnutrition cases in the district also in the coming year we will expect more malnutrition cases because of climatic change (EI-Nino) we will be prepared in the further to control food insecurity.

## Limitation

- There was no complete recorded data for the year 2014 only a nine month record was found
- All health centers which are not give inpatient service; data for top leading causes of admissions and mortality was not found.
- At district level, top leading diseases that cause outpatient morbidity were not identified by age category and sex.
- There was no compiled death and vital statics report at health facilities as well as district health office
- There is no data in IMR, under 5 mortality ratio

**Conclusion**

In Gonji Kolela district utilization health was good like immunization, PNC, contraceptive acceptance rate and other. On the other hand some health indicator under the target or standard and it needs improvement those gap which needs improvement such as ANC, delivery service utilization, high health worker to population ratio, some of health center and health post were without water and electrics supply, low smear positives case detection rate were some of the major problems. Pneumonia is the leading causes of morbidity in adults‟ outpatient visits and diarrhea is leading causes of morbidity in under 5 children in the district. Diarrhea and other unspecified diseases of parasites was also found to be the major health problem in the district, this implies there was no strong water quality monitory in the district, even if malaria is the 4$^{th}$ top ten diseases in the district, it is major problem in the region and also in the district. Therefore, prevention and control measure should be strength to reduce morbidity of major top

ten diseases and other priority diseases. Generally the district should also be supported by higher level of government body and NGO for better planning and success.

**Recommendation**

- Services which were in a good status during the study time should be improved and maintained like PNC, EPI, and family planning services.
- Services which was less than the target or expected during the study period should be need improvements within short period of time for the better health of the community as well as to achieve national and global targets.
- Health professionals should be employed for health centers as per the standard of WHO guide line.
- There should be strong water quality monitory
- The district main problems were drug shortage, budget insufficiency, lack of regular supervision form higher level shall be solved for successful achievement of different program and also the district sectors should keep records for further use
- The district health office has to conduct data quality assessment, to ensure data quality and evaluate trends of performances.

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## Annex 4: Health profile check list

1. Historical Aspects of the area (if available)

- How and why the name

  ________________________________________________________________________

  ______________________________________

- How was the district formed__________________________
- Any other historical aspect__________________________________

2. Geography and Climate

- Area of the District ____________________________
- Altitude ________________
- Latitude__________________
- Longitude ________________
- Average Annual rain fall _______________
- Average Annual temperature _________________
- Land bodies___________________________
- Water bodies_____________________________

3. Demographic information

- Total Population _________________________
- Male___________________________
- Female____________________________
- Urban_______________________________
- Rural____________________________
- Sex ratio (Male to Female) ___________________________
- Age structure: - percentage of children < 1yrs_______. <5yrs____< 15 years
- Percentage of old people >65 years_______
- Women child bearing age_____________
- Percentage of pregnant women_____________
- Dependency ratio__________________
- Average Household size ______________

4. Population size by religion

- Orthodox -------------
- Catholic -----------------
- Protestant---------------------
- Muslim ---------------
- Other-------------

5. Estimated Population size by Kebele in 2007 EFY (2014-2015)

| Sri. no | Name of the Kebele | Population size |
|---|---|---|
| 1 | | |
| 2 | | |
| 3 | | |
| 4 | | |
| 5 | | |
| 6 | | |
| 7 | | |
| 8 | | |
| 9 | | |
| 10 | | |
| 11 | | |
| 12 | | |
| 13 | | |
| 14 | | |
| 15 | | |
| 16 | | |
| 17 | | |
| 18 | | |
| 19 | | |
| 20 | | |
| 21 | | |
| 22 | | |
| 23 | | |
| 24 | | |
| 25 | | |
| 26 | | |
| Total | | |

6. Administrative setup

Total number of kebeles: ______________________

Rural ______________________________________

Urban______________________________________

Supporting NGOs______________________________

7. Health status

Number of health facilities 2007 EFY (2014-2015)

| Sri. no | Type of Health facility | Number |
|---|---|---|
| 1 | Hospital | |
| 2 | Health center | |
| 3 | Private clinic | |
| 4 | Pharmacy | |
| 5 | Rural drug vender | |
| 6 | Diagnostic Laboratories | |
| 7 | Health posts | |

8. Man power of Gonji Kolela district health office and health facility in 2007EFY (2014-2015)

| Sri. no | Type | Male | Female | Total |
|---|---|---|---|---|
| 1 | Physicians | | | |
| 2 | Health officers | | | |
| 3 | Laboratory technician/technologist | | | |
| 4 | Pharmacy technician/Pharmacist | | | |
| 5 | Nurses | | | |
| 6 | Midwife | | | |
| 7 | X-Ray technician | | | |
| 8 | ENHS | | | |
| 9 | HEWs | | | |
| 10 | TBA | | | |

9. Ratio of health facility and professional to population 2007 EFY (2014-2015)

| Sri. No | Description | Ratio |
|---|---|---|
| 1 | Hospital: population | |
| 2 | Health center: population | |
| 3 | Health post: population | |
| 4 | Physician; population | |
| 5 | Health officer: population | |
| 6 | Nurse: population | |
| 7 | Midwife: population | |
| 8 | HEW: population | |

9. Health service institutions and infrastructures

| | Type of institution | | No of institutions | Remark |
|---|---|---|---|---|
| 1 | Number of health centers | with sustainable/ 24 hour /electric power | | |
| | | without sustainable/ 24 hour /electric power | | |
| | | with telephone service (cable based/mobile) | | |
| | | without telephone service (cable based/mobile) | | |
| | | with piped water supply | | |
| | | Without piped water supply | | |
| | | No of HC with transportation road access | | |
| 2 | Health posts | with sustainable/ 24 hour /electric power | | |
| | | without sustainable/ 24 hour /electric power | | |
| | | with telephone service (cable based/mobile) | | |
| | | without telephone service (cable based/mobile) | | |
| | | with piped water supply | | |
| | | Without piped water supply | | |
| | | No of health posts with road and transportation access | | |

10. Top causes of morbidity and mortality 2007 EFY (2014-2015)

A. Top ten leading causes of OPD visit (morbidity)

| Sr. no | Adult | | Pediatrics | |
|---|---|---|---|---|
| | Diseases type | Number | Diseases type | Number |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

B. Top ten causes of deaths (mortality).

| Sr. no | Adult | | Pediatrics | |
|---|---|---|---|---|
| | Diseases type | Number | Diseases type | Number |
| 1 | | | | |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | | | |
| 8 | | | | |
| 9 | | | | |
| 10 | | | | |

6. Vital statistics 2007 EFY (2014-2015)

   CBR_____________

   CDR______________

   NMR______________

   PNMR_____________

   IMR_______________

   MMR______________

   GR__________________

   11. MCH and EPI coverage of the district 2007 EFY (2014-2015)

| Sr. no | Description | Performance | | Remark |
|---|---|---|---|---|
| | | number | coverage | |
| 1 | ANC 1 coverage | | | |
| 2 | ANC 4 coverage | | | |
| 3 | BCG coverage | | | |
| 4 | Measles vaccine | | | DOR = |
| 5 | Penta1 | | | |
| 6 | Penta2 | | | |
| 7 | Penta3 | | | |
| 8 | $OPV_1$ | | | |
| 9 | $OPV_2$ | | | |
| 10 | $OPV_3$ | | | DOR = |
| 11 | PAB | | | |
| 12 | Fully vaccinated | | | |
| 13 | Contraceptive prevalence | | | |
| 14 | TT2 coverage for pregnant | | | |
| 15 | TT2 coverage for no pregnant | | | |

13. Hygiene and environmental health services 2007 EFY (2014-2015)

| Sr. no | Description | | |
|---|---|---|---|
| | | Number | (%) |
| 1 | Number of house hold with latrine | | |
| 2 | Latrine coverage | | |
| 3 | Safe water supply coverage | | |
| 4 | Number of kebeles accessed to safe water supply | | |

14. Endemic Diseases

A. Malaria prevention and control program of Gonji Kolela District 2007 EFY (2014-2015)

| Sr. no | Description | | Number | |
|---|---|---|---|---|
| 1 | Number of Malarias‟ Kebeles | | | |
| 2 | LLIN coverage | | | |
| 3 | Coverage of Insecticide chemical spray | | | |
| 4 | Total OPD cases | | | |
| | | | <5 | >5 |
| 5 | Confirmed cases by RDT | PF | | |
| | | PV | | |
| 6 | Case treated clinically | | | |
| 7 | Total BF done | | | |
| | Cases treated based on lab finding | PF | | |
| | | PV | | |
| | | Mixed | | |

Supplies: RDT____ Coartem _______________

B. Prevalence of TB/Leprosy: 2007 EFY (2014-2015)

| Sr. No | Description | | Population no. (%) |
|---|---|---|---|
| | Prevalence of TB | | |
| 1 | Pulmonary TB | Smear positive | |
| | | Smear negative | |
| 2 | Extra PTB | | |
| 3 | TB detection rate | | |
| 4 | TB Rx completion rate | | |
| 5 | TB cure rate | | |
| 6 | TB Rx success rate | | |
| 7 | TB defaulter rate | | |
| 8 | Death on TB Rx | | |
| 9 | Total TB patients screened for HIV | | |
| 10 | HIV prevalence rate among TB cases | | |
| 11 | Prevalence of Leprosy | | |

C. HIV/AIDS 2007 EFY (2014-2015)

| Sr. No | Activities | Male | Female | Total | Remark |
|---|---|---|---|---|---|
| 1 | Total people screened for HIV | | | | |
| 2 | VCT | | | | |
| 3 | PICT | | | | |
| 4 | PMTCT | | | | |
| 5 | HIV Prevalence | | | | |
| 6 | Total PLWHIV | | | | |
| 7 | On ART | | | | |
| 8 | Pre ART | | | | |
| 9 | Condom Distribution | | | | |

15. Education and school Health

*Private Schools e.g. Nursery…

| Sr. no | Type of School | # Schools | # teachers | | | # Students | | | Student School Drop out | Female Student School Drop out |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Male | Female | Total | Male | Female | Total | | |
| 1 | Primary | | | | | | | | | |
| | 1-4 | | | | | | | | | |
| | 5-8 | | | | | | | | | |
| | 1-8 | | | | | | | | | |
| 2 | Secondary | | | | | | | | | |
| | 9-10 | | | | | | | | | |
| | 11-12 | | | | | | | | | |
| | 9-12 | | | | | | | | | |
| 3 | Others (Take note)* | | | | | | | | | |
| | Total | | | | | | | | | |

16. School health activities:

- Schools with water supply______________________
- Schools with functional latrines _______________
- Schools with HIV/other Health clubs_________
- Literacy ratio____________________________

17. Socio economic conditions 2007 EFY (2014-2015)

A. Employment

- Number of people employed____________
- Number of people un employed______________
- Ratio of Employed to un employed____________

B. Income

- Main source of income ______________________________
- No. of the population committed in:
- ✓ Agriculture ______ _________________________
- ✓ Government employee_____________________
- ✓ merchandise________________________________
- ✓ Husbandry ___________ ____________________
- ✓ Hotel and catering _________________________
- ✓ Others (specify) ______________________ _____
- Yearly income per house hold_______________________
- Average income per capita _________________________

C. Social aspects

- Number of youth clubs___________________________
- Number of public libraries_________________________
- Others____________________________________________

18. Communication and Utilities

How many of the health facilities and kebeles have access to:

**a.** Transportation: Kebele ______________________________ (%)

Health facility_______________________ (%)

**b.** Telecommunication: Kebele _________________________ (%)

Health facility____________________ (%)

**c.** Electric power: Kebele __________________ (%) Health facility ___________ (%)

19. Health sector expenditure and financing 2003 - 2007 EFY (2011/2015)

| Sir.no | Source | 2003EFY | 2004EFY | 2005 EFY | 2006 EFY | 2007EFY |
|---|---|---|---|---|---|---|
| 1 | Total district budget (Birr) | | | | | |
| 2 | Allocated to health sector (Birr) | | | | | |
| 3 | Total per capital health expenditure(Birr) | | | | | |

*Name of NGOs which Support the health Sector: ______________________________________________

20. Health Care financing /HCF/ (____________to___________ EFY)

| Sri. No | Name of the Health HFs | HCF Started at ( EFY) | Budget Allocated (birr) | | | Budget Utilized (birr) | | | Remark |
|---|---|---|---|---|---|---|---|---|---|
| | | | 200 … | 200… | 200.. | 200 .. | 200… | 200 … | |
| 1 | | | | | | | | | |
| 2 | | | | | | | | | |
| 3 | | | | | | | | | |
| 4 | | | | | | | | | |
| 5 | | | | | | | | | |
| 6 | | | | | | | | | |
| 7 | | | | | | | | | |

21. Fee Waiver (FW)

Budget Allocated (Birr) ______________________________

| Sr. no | Name of Kebele | Total Population | Selected people for FW | # people get service | Budget Utilized (Birr) |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
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| | | | | | |
| | | | | | |
| | | | | | |

22. Exempted Health services:

A/

B/

C/

14. Disaster situation in the district 2007 EFY (2014-2015)

- Was there any disaster (natural or manmade) in the district in the last one year?

  Yes (specify) ___________________

  No_________________________

- Any recent disease outbreak/other public health emergency?

  Yes (specify) ___________ ____________________

  No___________________________________________

- If yes cases________ and deaths_________

23. Population screened for malnutrition

Children__________

Pregnancy__________

24. Nutrition intervention in Gonji Kolela district 2007 (2014-2015)

| Sr. No | Type of food intervention program | |
|---|---|---|
| 1 | OTP sites | |
| 2 | TFU program | |
| 3 | TSF program | |
| 4 | CBN program | |
| 5 | EOS program | |
| 6 | Others | |

25. What do you think the major Health problems of the district? **--------------------------------------**

**---------------------------------------------------------------------------------------------------------------**

22. What do you think solutions of the addressed problems? ------------------------------------------

23. What are the main zoonotic diseases in the district**?**

A.

B.

20. Problem Identification and Priority Setting – set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc.

21. Discussion of the highlights and the main findings of the health profile assessment and description

# Chapter V – Scientific Manuscripts for Peer reviewed Journals

## 5.1. Scabies outbreak –Enarji Enawuga, Ethiopia, 2015

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**Abstract**

**Background:** Scabies is ectoparasitic infection which has the long trouble humanity. It is caused by the mite Sarcoptes scabiei. Scabies occurs worldwide and its prevalence is estimated to be about 300 million cases yearly. Therefore, the objective of the study was to examine factors associated with scabies, mode of transmission, prompts of diagnosis and achievable intervention measures.

**Method:** 40 scabies cases and 80 community controls were recruited in October 12-20, 2015 and analyzed the risk factors for scabies with 1:2 unmatched case-control methods using structured questionnaire. To measure the significance of association we constructed Odds ratio and 95% CI in bivariate and multivariate analysis.

**Results:** A total of 56,122 of scabies cases with no death were identified during the outbreak and 28% of populations were affected. A median age of cases was 16 (range, 1-60 years), the SD was ± 14.1 years and 80 community controls with a median age of 18 (2-49 years), the SD was ±10.8 years. Scabies lesions and sore were predominately located at interdigital spaces like finger web 40 (97%).Infrequent bathing AOR 2.83 (95% CI: 1.18- 6.7), take shower without soap AOR 4.5(95% CI: 1.8 – 11.4), infrequent washing clothes AOR 16.9 (95% CI: 3.7-75.8), sleeping with scabies cases AOR 102 (95% CI: 26-402) were risk factors. Knowledge about scabies AOR 0.17 (95%CI 0.38-0.8) were protective factors.

**Conclusion:** This phenomenon may be due to the fact that certain environmental conditions such as overcrowding, poor personal hygiene, poverty, and lack of knowledge. Accordingly Control programs should be put in place and implemented by reducing overcrowding, and by improving health education, personal hygiene, treatment and surveillance among high-risk population sand lastly implement massive treatment campaigns.

**Key Words:** Scabies, case-control, Enarji Enawuga, Ethiopia

## Complied Body Works

### Background

Scabies is a contagious skin disorder and one of the most common itching dermatoses in the world especially in less developed countries. Epidemiologic survey of scabies periodically done in many countries is a reflection of general status of public health in the community (1). There is a saying that one cannot hide love, cough and itching from others (2).

Scabies is a common parasitic infection caused by the mite *Sarcoptes scabiei* (3). Infestation is transmitted through a direct contact with an infected person or animal, rarely also via objects, underwear, or bed linen. Outside the host, it can survive from 3 to 10d comprising, along with the other invasive stages the larvae and nymphs (4).

The classic manifestations of scabies include generalized itching which often becomes worse at night and abnormal skin lesions(papules, pustules, nodules, and occasionally urticaria).The skin lesions are often noted on wrists, finger webs, axillae, the per umbilical region, abdominal wall, genitals and buttocks(5). Generally, Scabies causes intense itch, severely affecting, sleep and quality of life. Crusted scabies, a severe infestation with thousands of mites, is associated with extremely high risk of contagion and causes considerable morbidity. Complications and mortality may occur due to secondary bacterial infections (6).

Scabies affects people from every country and is one of the commonest dermatological conditions in the world. It occurs worldwide and its prevalence is estimated to be about 300 million cases yearly (7). In the same way scabies affect more than 130 million people worldwide at any one time, with the highest rates occurring in countries with hot, tropical climates, where infestation is endemic (8).Scabies affects people of all countries, particularly the most vulnerable sectors of society. Children in developing countries are most susceptible, with an average prevalence of 5-10 %( 9).

Epidemiological studies indicate that the prevalence of scabies is not affected by sex, race, age, or socioeconomic status. The primary contributing factors in contracting scabies seem to be poverty and overcrowded living conditions (10). Institutions where scabies is endemic, this most likely reflects reduced immunity as well as increased exposure (11). Poverty and overcrowding are the main risk factors, and outbreak in institution and refugee camps are common (9)

The most common source of transmission is prolonged skin-to-skin contact with an infected individual (handholding, sexual contact, etc.). It takes *c.* 15–20 min of close contact for

successful direct transmission, and for this reason, scabies is also consider a sexually transmitted disease (12).

Scabies is endemic in many tropical and subtropical areas, such as Africa, Egypt, Central and South America, northern and central Australia, the Caribbean Islands, India, and Southeast Asia (13). Scabies is list among the top 50 most prevalent diseases worldwide, with a global prevalence of 100,625,000 in 2010 (1.5% of the world population) (14). Recently the World Health Organization added scabies to the list of „„Neglected Tropical Diseases‟‟, thereby recognizing its impact on human health. The International Alliance for the Control of Scabies, a newly formed organization, proposes to accomplish scabies control in vulnerable communities in 2013 (15).The main objected of this study was to investigate the outbreak epidemiologically and identify the risk factors for the occurrence of the outbreak and provide appropriate control & prevention measures of the disease

**Materials and Methods**

The outbreak investigation was conducted in one kebeles Gedeb Eyasu of Enareje Enawuga district, East Gojjam zone, and Amhara regional state. Gedeb Eyasu-kebele is one of 27 kebeles of Enarji Enawuga district. A total population of 201,003 (166,616 rural and 34,387 Urban), Male account 100,843 (50.2%) of the population and 27,216 under five year age of children. The study was conducted from October 12-20, 2015 and unmatched case-control study was used to conduct. Simple random sampling method was employed to recruit cases and controls. Sample size was calculated Epi-info 7 stat calc for unmatched case-control study. Therefore, the sample size was calculated using Epi info stat calc, 120 samples 40cases and 80 controls were selected. In- depth Interviews were conducted using a semi – structured interview with key informants district health office, district education office and with community member of society about food and water insecurity, school dropout rate, if they are recognize outbreak, then identify causes of outbreak, what control measure should they take. Observational assessment was done, such as hygiene and sanitation, overcrowding, season (climate change), in this year there is climatic change at national level Eli no .So, focus group discussion was done with community about food insecurity, water supply shortage and also scabies outbreak. Data was analyzed on computer using Epi info 7, MS- Excel and Arc GIS were used. Descriptive and analytical statically analyses were under taken. Results were presented using graphs, tables, charts and attack rate were also calculated.

**Results**

**Descriptive Epidemiology**

We identified 56122 cases of scabies with no death. The index patient was no specifically known but the primary case start from Debrework priest students (Yekise temarie).Case control study was conducted, there were 40 scabies cases (21 males and 19 females) with a median age of cases was 16 (range, 1-60 years), the SD was ± 14.1 years and 80 community controls (37 males and 43 female) with a median age of 18 (2-49 years), the SD was ±10.8 years. The number of cases among males and females were: Female accounts 30426(54.3%) (Table 2) .The cases distributed by age groups in which, attack rate of 31.7% was observed among the 2-5 years of age followed by 29.05%% among 6-14 and the overall attack rate 27.6% in all age group (Table-33).

**Table 32:** Age specific attack rate, Enarji Enawuga Woreda, East Gojjam zone, Amhara region, Ethiopian 2015

| Age Group | Number of cases | Total No of population | Attack rate (%) |
|---|---|---|---|
| < 2 | 1456 | 10151 | 14.3 |
| 2-5 | 5477 | 17235 | 31.7 |
| 6-14 | 17235 | 59324 | 29.05 |
| 15-59 | 31954 | 116293 | 27.47 |
| Total | 56122 | 201003 | 27.6 |

**Table 33:** Distribution of Scabies cases by sex in Enarji Enawuga Woreda, East Gojjam zone, Amhara region, Ethiopian 2015

| Sex | Frequency | Percent | Population | Rate/100 |
|---|---|---|---|---|
| **Female** | 30426 | 54.3 | 100843 | 30.1% |
| **Male** | 25696 | 45.7 | 100160 | 25.6% |
| **Total** | 56122 | 100 | 201003 | 28% |

From a total of 27 Kebeles affected in Enarji Enawuga woreda, the highest prevalence of scabies cases were reported from Aba Jemiber Kebele (72.2%) , Agamna Deje (66%), Arar (48.6%) .(See figure 26).

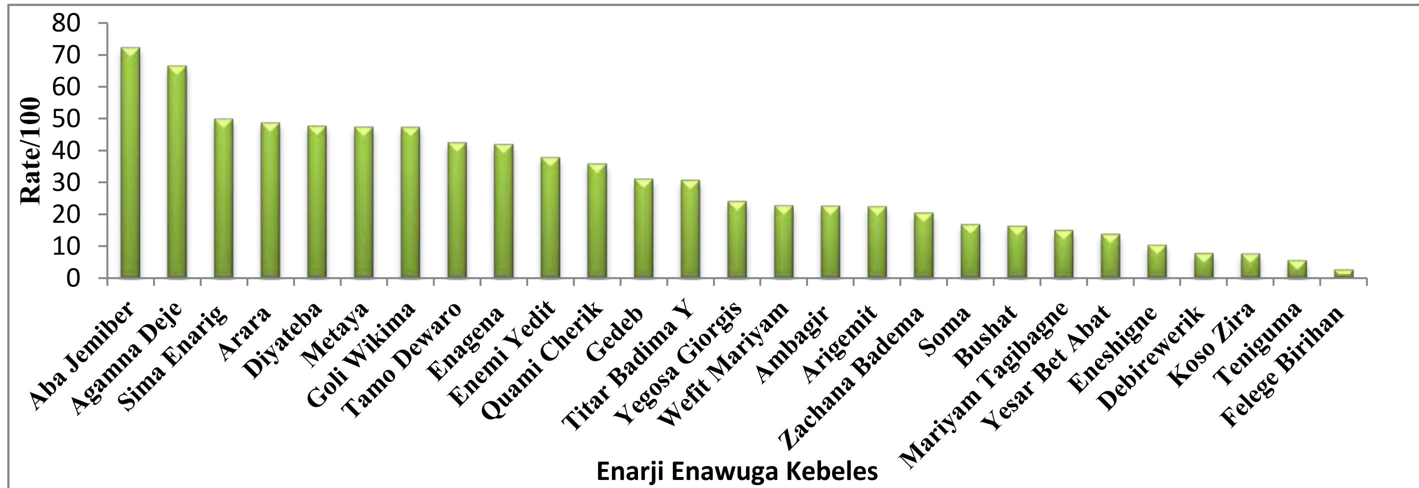


**Figure 25:** Distribution of Scabies cases by kebeles in Enarji Enawuga Woreda, East Gojjam zone, Amhara region, Ethiopian 2015

The reported cases, first experience sign and symptoms, majority cases 39(97.5%) presents with itching followed by 1 Rash (2.5%).All the cases 100% present intensity of itching is high at night .

43 respondents were under 18 years of age that means they are not eligible, so excluding them, 41(34.2%) of them married, followed by single 32 (26.7%) and divorced 4 (3.3%) respectively .Among the 120 respondents , majority 43 (35.8%) were in primary education and 33 (27.5%) were no education or illiterate (see table-35).

**Table 34:** zone, Amhara region, 2015Distribution of the respondents by their level of education, Enarj Enawuga Woreda, East Gojjam

| Level Education | Number | Percent |
|---|---|---|
| No education | 32 | 26.6 |
| Not eligible | 14 | 11.6 |
| Primary education | 46 | 38.3 |
| Religious education | 17 | 14.1 |
| secondary education | 11 | 9.1 |
| TOTAL | 120 | 100 |

The occupations of the respondents, Majority of respondents were Farmers and students 43(35%) and followed by 18(14%) were not eligible for work.

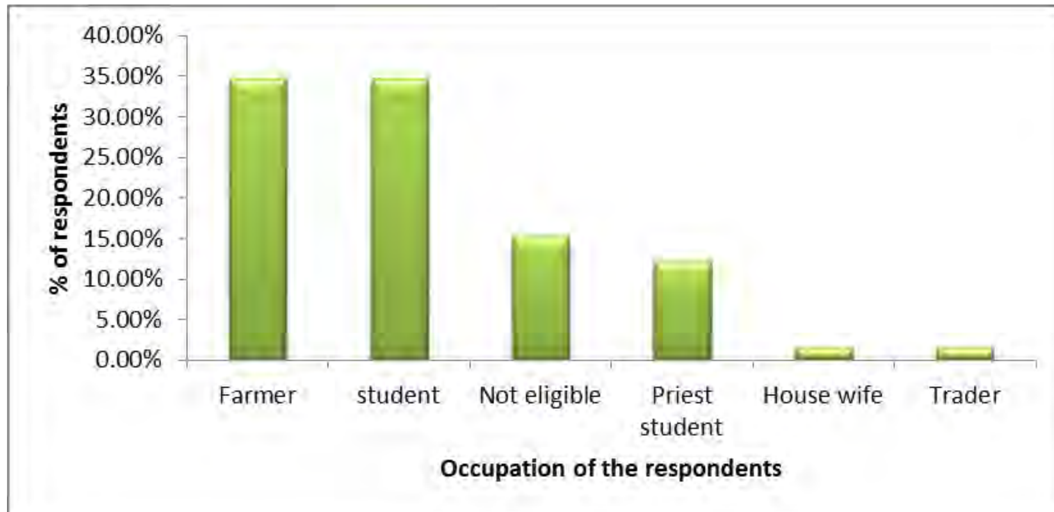


**Figure 26:** Distribution of respondents according to their occupation, Enarj Enawuga woreda, East Gojjam zone, Amhara region, 2015

Three groups were made according to their number of family members. Majority (69, 57.5%) respondents had family members 4 - 6 and the mean of the persons living in each room was 4.69 with SD of ±1.93 (Table-33).In additional to this, thoroughly all cases and controls were belong to the orthodox Christian followers 120 (100%).

**Table 35:** Respondents distribution regarding number of persons living in each room, Enarj Enawuga woreda, East Gojjam, Amhara region, Ethiopian, 2015

| Persons living per house | Number | Percent |
|---|---|---|
| **1-3** | 34 | 28.3 |
| **4-6** | 69 | 57.5 |
| **7-10** | 17 | 14.2 |
| **Total** | 120 | 100 |

**Skin examination**

When seen scabies skin examination form 40 cases, 37(92.50%) were seen scabies lesion and 39 (97.5%) were also seen skin sore from these eight cases (42%) presented with crusted/Norwegian scabies. When we see skin sore almost half of cases 26 (66.67%) were look crusted (infected scabies).

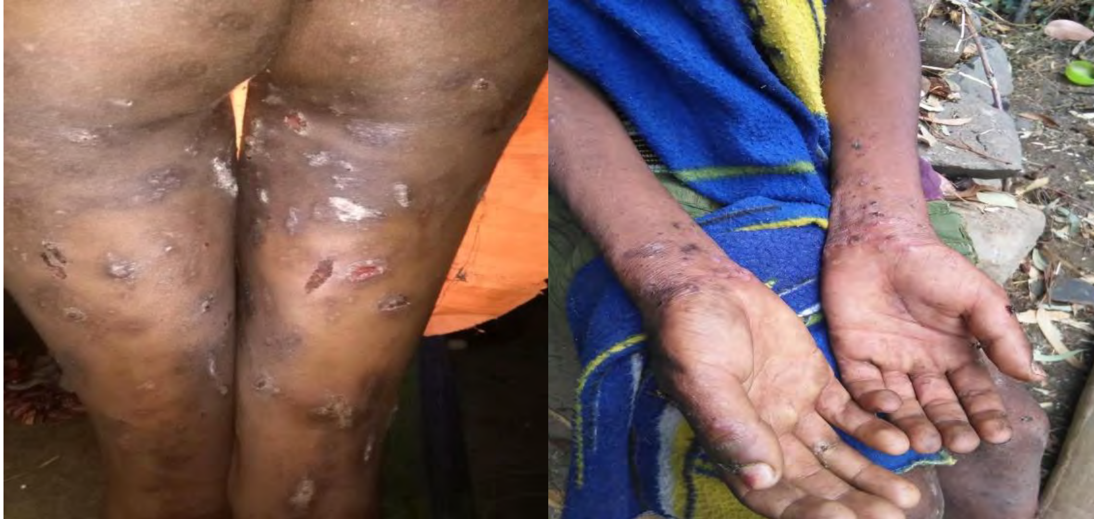

**Figure 27:** Persons who infected by scabies in Enarj Enawuga woreda, East Gojjam zone, Amhara region, 2015

Majority of cases were Moderate (6-10) lesions and sores and only three cases very severe (0-50) infected by scabies (See figure 29) .These lesion were predominantly located at interdigital spaces like finger webs 40 (97%), ulnar border of the hand 27 (65.8%), and other mostly infected area inter Gluteal area (see table-36)

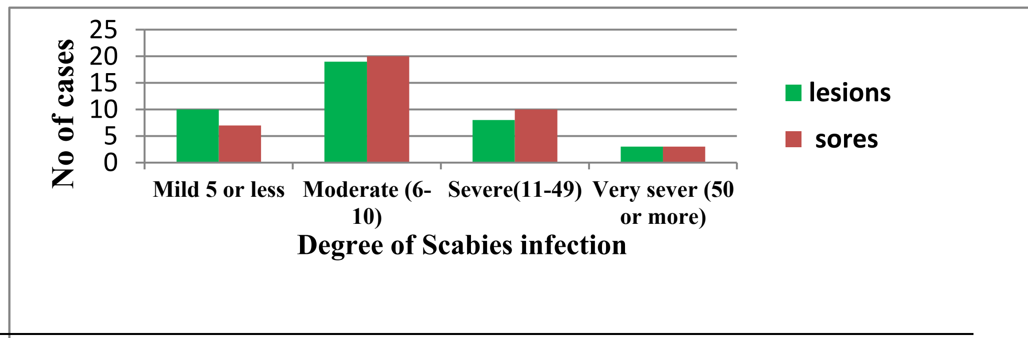


**Figure 28:** Degree of scabies infection in body part by levels, Enarj Enawuga woreda, East Gojjam zone, Amhara region, 2015

**Table 36:** Types of lesions found in 41 cases with scabies in Enarji Enawuga district, East Gojjam zone, Amhara region, 2015

| Location of Lesions and sores | No of cases | % |
|---|---|---|
| Finger webs | 40 | 97.56 |
| Ulnar border of the hand | 27 | 65.85 |
| Elbow | 16 | 39 |
| Wrist | 8 | 19.5 |
| Anterior axillaries line | 16 | 39 |
| Umbilicus | 5 | 12.2 |
| Inter Gluteal line | 25 | 60.9 |
| Genital male | 3 | 7.3 |
| Inner aspects of thighs | 21 | 51.2 |

All 41 affected cases were from 3 kebeles. We can‟t identify the index case consequently; the primary cases observed among priest students (Yekolo temarie) and later on progressed to the community. The onset of the outbreak was on 1 of February, 2015. Peak cases were seen in August /2015(see figure -30).

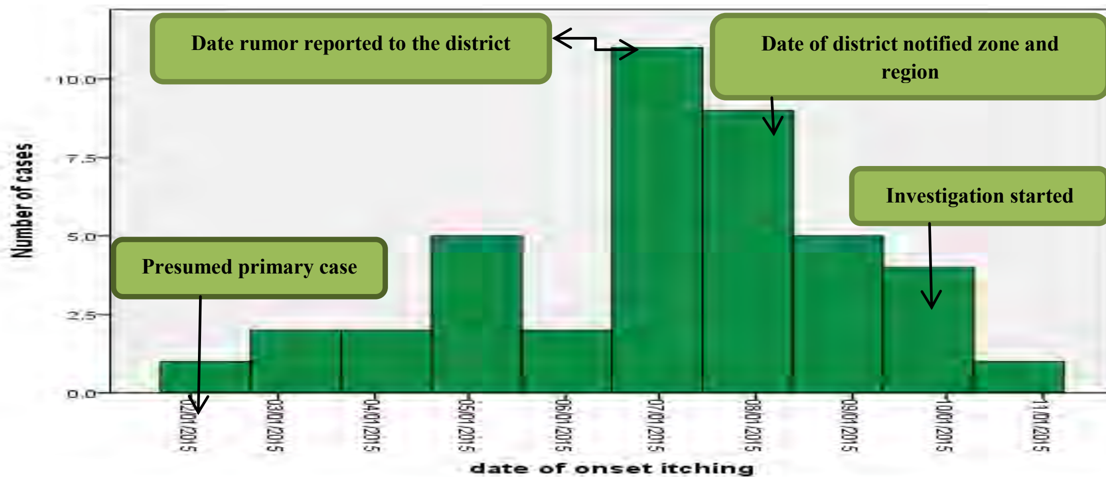


**Figure 29:** Epidemic curve of Scabies cases by date of onset of itching, Enarj Enawuga woreda East Gojjam Zone, Amhara region, 2015

**Analytic epidemiology**

We recruited 40 scabies cases with 80 controls. The median age of the cases was 16 (range, 1-60) and community controls was 17(range, 2-49). The statically significant variables in bivariate analysis were infrequent bathing OR 3.46 (95% CI 1.5-7.6), take shower without soap OR 4. 5 (95% CI 1.9 – 10.9), infrequent changing clothes OR 8.46 (95% CI 3.56 -20.06), sleeping with scabies cases OR 97 (95% CI 24.8-381), were risk factors for developed scabies. On the other hand, knowledge about scabies diseases OR 0.13 (95%CI 0.04-0.41) were protective factors. On multivariate logistic regression analysis, risk factors that remained statistically significantly associated with the diseases and protective factors that remained statistically significantly associated with the diseases.

**Table 37:** Bivariate and Multivariate analysis of risk and protective factor for Scabies outbreak, Enarj Enawuga Woreda, East Gojjam zone, Amhara region, 2015

| Variables | | Case (N=40) | Control (N=80) | COR(95% CI),p-value | AOR (95% CI),P-value |
|---|---|---|---|---|---|
| Taking shower without soap | Yes | 18(60%) | 13(40%) | 4.5(1.9-10.9), P = 0.001 | 4.53(1.8-11.4), P = 0.001 |
| | No | 22 (24.7%) | 67(75.3%) | | |
| Sleeping with other | Yes | 29 (18.6%) | 32 (52.5%) | 3.9( 1.7- 9.0), P =0.01 | 3.8( 1.6- 9.1), P =0.02 |
| | No | 11(47.5%) | 48 (81.4%) | | |
| Infrequent bathing | Yes | 25(49%) | 26(51%) | 3.46(1.5- 7.6), p =0.002 | 2.83(1.18- 6.7), p =0.019 |
| | No | 15(21.7%) | 54(78.3%) | | |
| Infrequent washing clothes | Yes | 38 (48.7%) | 40 (51.3%) | 19 (4.2-84.1 ), p<0.001 | 16.9 (3.7-75.8 ), p<0.001 |
| | No | 2(4.8%) | 40(95.2%) | | |
| Infrequent changing clothes | Yes | 29(60.4%) | 19 (39.6%) | 8.46 (3.5- 20 ), P <0.001 | 7.6 (2.8- 20.6), P <0.001 |
| | No | 11 (15.3%) | 61(84.7%) | | |
| Sleeping with scabies case | Yes | 37(80.4%) | 9(19.6%) | 97(24.8-381),P < 0.001 | 102(26-402) P < 0.001 |
| | No | 3(4.1%) | 71(95.9%) | | |
| Number of family | ≥4 | 24(45.3%) | 29(54.7%) | 2.6(1.2-5.7),P = 0.015 | 2.8(1.1-6.9),P = 0.019 |
| | <4 | 16(23.3%) | 51(76.1%) | | |
| Knowledge about scabies | Yes | 36(45%) | 36(90%) | 0.13(0.04-0.42),P<0.001 | 0.17(0.38-0.8),P=0.028 |
| | No | 36(45%) | 44(55%) | | |

### Qualitative analysis

Discussion was done among affected people by scabies, health workers, committee of community HDA and school teacher. The discussion was assessed all issues they raise so many questions some of them water problem to do hygiene practices like to take shower and washing clothes even in school setup there is no water access. Generally to get water they must go at least 5 hours from their home and almost all spring were dry because of climate change Eli-no. The other problem they were discuss is overcrowding in student class it is favorable condition or precipitating factor for spreading of scabies and because of scabies is high contagious diseases so that, student dropout rate were high in these year( 4% dropout rate).We observed different villages, the local communities reside in villages without access to safe drinking water even spring water so when we saw most of peoples they wear their clothes for long time and they are not take shower for pervious weeks even months.

### Interventions undertake

In a community with prevalence less than 15% the advised treatment will be individual and contact (family member) management. But in Enarji Enawuga Woreda the prevalence rate was 29% so we need to give mass treatment for all population based on prevalence rate. Treatment was given for adult 25% BBL once per day for 3 days or for children above 2 Years old 12.5% BBL once per day for three days and leave on for 1 day before washing off. All the skin below the neck should be treated, including the genital, buttock, palm and soles and under the nails. On other hand for children under 2 years, pregnant and breast feeding women, 5 to 10 % sulfur topical application once per day for three days. The other important treatment drug in in mass treatment Ivermectine oral 200 micrograms/kg once to be repeated after two weeks.

The other interventions were taken awareness creation on all household contacts should be treated at the same time even if asymptomatic and Reapply the topical scabicide to the hands if they are washed during the treatment period (in 8 hours after application of the medication).

### Discussion

As we know, in our country there are no much studies about scabies, so that this study was conducted to identify risk factors for scabies in this district as well as Ethiopian. Scabies is a global problem and has been reported in Japan, Pakistan, America and Spain (16). Early diagnosis of scabies infection is important because of its highly contagious nature. However, scabies is not an infection disease commanded to be reported to the national hygiene organization in most countries, perhaps due to its minimal fatality rate and treatable nature (17).

Few studies reveal that scabies is significantly more prevalent among families of large size, high crowding index, low socioeconomic condition and those receiving their water supply from a hand pump (18).we found majority respondents both in case and control 70 (56%) were using spring water supply as we know the spring were dry because of climate changes so there was huge shortage of water. When we see families‟ members‟ size, majority of 68 (54%) respondents had family member 4-6 in each room, it is similar to studies done in Bangladesh Dhaka medical college, and majority 107 (50.7%) respondents had family members 4-6(19). In these studies maximum respondents were infected by family members. A good number from 40 cases 30 (78%) were sleeping with contracted scabies cases and 20 (54%) were put on clothes someone infected person in the previous 6 weeks. Realizing that mites can‟t easily survives without body part but with long contact and its contagious nature putting on clothes someone infected by scabies in pervious 6 weeks and sleeping with contracted scabies cases was found to be an important positive predisposing factor for the evolution of scabies in this study(19) . Other studies reveal that scabies is not read transmitted by clothing bed sheets or their fomites but this mode of transmission should be considered with cases of crusted (sever scabies ) due to extreme burden(22).

On survey report that scabies is most commonly observed in very young followed by older children and young adults (23).In our study most cases were children 31% from 2-5 years old followed by 29% from 6-14 years old children.

Major symptoms which identified in this outbreak were itching and worse at night. Generally Itching is the main symptom of scabies. This is often severe and tends to be in one place at first (often the hands), and then spreads to other areas. The itch is generally worse at night and after a hot bath. You can itch all over, even with only a few mites, and even in the areas where the mites are not present (23).

In crude and adjusted analysis more than a week take shower, wash clothes as well as change clothes were significantly associated with scabies. In fact in other studies scabies is not influenced by hygiene practices or the availability of water, as demonstrated by institutions outbreaks where high standards of hygiene exist, and by the experience among Kuna Indians, the indigenous population of panama, population in which careful daily personal hygiene is traditional (19) but in our setup scabies cases were related to hygiene practices.

The sites of predilection are chiefly the finger webs, ulnar border of the hand, anterior axillaries line, elbow and wrist. Almost all cases account of itching, some of have rash and its ability to spread among people because scabies spreads predominantly by personal contact.

Scabies is a very exciting disease as its occurrence is related with a great number of variables and the disease is manifested by a variety of lesions. Scabies was found to have no respect for age, sex, place, occupation, social status or race. It is prevalent throughout the world in all age groups and in both sexes, but the incidence is high in underdeveloped countries due to overcrowding and poor personal hygiene. Like in Enarj Enawuga district they experience poor personal hygiene so that they are easily contracted with scabies.

In these studies more than a week taking shower and washing clothes, without detergents taking shower, and put on clothes of someone who was diseases in the previous six weeks are identified risk factors for scabies infection. Since delayed diagnosis of scabies may results in its direct or indirect spread in districts so, we have to be particularly alert with these patients having risk factors and take measures for this problem.

**Limitation**

There were limited studies or researches in scabies especially Africa as well as Ethiopian

**Conclusion**

Scabies continues to be a silent health problem in our community. In this study, scabies is transmitting to person to person by sharing clothes, sleeping with contracting scabies case; bating someone else with scabies cases.  Therefore, it seems that education about the signs and transmission method of this disease to high risk groups will help greatly to reduce the prevalence of scabies and prevent probably future epidemic. Increasing knowledge about scabies diseases and having good hygiene are the proper methods for controlling scabies in the community.

**Recommendation**

The woreda health office and health workers especially HEW have to increase their surveillance activity particularly active surveillance this means they have to assess cases home to home actively .Promote the awareness of the community on the modes of transmission scabies. There must have been treatment guideline for scabies diseases in all health facility and all health workers must be train about scabies

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# Chapter VI – Abstracts for Scientific Presentation

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## 6.1 scabies Outbreak Investigation, Enarji Enawuga, Ethiopian, 2015

**Abstract**

**Background:** Scabies is ectoparasitic infection which has the long trouble humanity. It is caused by the mite Sarcoptes scabiei. Scabies occurs worldwide and its prevalence is estimated to be about 300 million cases yearly. Therefore, the objective of the study was to examine factors associated with scabies, mode of transmission, prompts of diagnosis and achievable intervention measures.

**Method:** 40 scabies cases and 80 community controls were recruited in October 12-20, 2015 and analyzed the risk factors for scabies with 1:2 unmatched case-control methods using structured questionnaire. To measure the significance of association we constructed Odds ratio and 95% CI in bivariate and multivariate analysis.

**Results:** A total of 56,122 of scabies cases with no death were identified during the outbreak and 28% of populations were affected. A median age of cases was 16 (range, 1-60 years), the SD was ± 14.1 years and 80 community controls with a median age of 18 (2-49 years), the SD was ±10.8 years. Scabies lesions and sore were predominately located at interdigital spaces like finger web 40 (97%).Infrequent bathing AOR 2.83 (95% CI: 1.18- 6.7), take shower without soap AOR 4.5(95% CI: 1.8 – 11.4), infrequent washing clothes AOR 16.9 (95% CI: 3.7-75.8), sleeping with scabies cases AOR 102 (95% CI: 26-402), were risk factors . Knowledge about scabies AOR 0.17 (95%CI 0.38-0.8) were protective factors.

**Conclusion:** This phenomenon may be due to the fact that certain environmental conditions such as overcrowding, poor personal hygiene, poverty, and lack of knowledge. Accordingly Control programs should be put in place and implemented by reducing overcrowding, and by improving health education, personal hygiene, treatment and surveillance among high-risk population sand lastly implement massive treatment campaigns.

**Key Words:** Scabies, case-control, Enarji Enawuga, Ethiopia

Word Count: 273

**6.2 HIV infection surveillance data analysis in Felege Hiwot Referral Hospital ART center, Bahir Dar, Amhara Region, Ethiopia 2010 – 2014**

**Abstract**

**Background:** HIV/AIDS has been documented as one of the major public health challenges in the world. I n Ethiopian, The 2014 estimated number of people living with HIV (PLHIV) was 769 600 with 15 700 new HIV infections and 35 600 AIDS-related deaths. Amhara region has the second largest number of HIV infected persons in Ethiopia

**Methods:** Data was collected from ART( Antiretroviral Treatment) center on daily registration of new HIV cases in Data Base Management system (DMS) and Institutional based Descriptive cross sectional study design was used.

**Results:** A total of 3321 new HIV/AIDS cases and 40 deaths reported respectively from year 2010-2014. Form the above estimation the average case was 664 (20%), the range between 426 and 886 cases, and standard deviation (SD) of 181. The highest proportion (26.6/100) in 2010 and the lowest 12.8/100 in 2011, it seems decreased from year to years. Morbidity is higher in females 1119 (58%) than the males 1410 (42%) on the reverse, the mortality was higher in males 21 (58%) than in females 19 (42%).The majority of patient 3202 (96.42%) are Good Adherences. ART Adherence is higher in female patients 1852(97%) than male 1350 (95.7%). From 3321 patient at the first visit 1962(62%) of patients were severe immunodeficiency and also1725 (52%) were WHO III stage after 6 month of ART the immune status was improved and WHO staging was reclassified and majority of patient were improved.

**Conclusion and Recommendation:** HIV/AIDS cases have decreased from year to years. Even if incidence rate of HIV/AIDS was decreases the burden of HIV/AIDS still increases. TB-HIV co infection is critical problem which need give attention in screening program. After starting of ART in the first 6 month of treatment strict follow up and registered ever follow up stage ; identify either they are improve or not.The reporting format should including important variable like Opportunistic infection. As we know nutritional intervention is the integrated part of HIV/AIDS management so we must registered and record properly patient weight and height to calculate BMI and follow up stage.

**Key Word:** HIV, AIDS, ART

**Word Count:** 335

## Chapter VII – Narrative Summary of Disaster Situation Visited

### Introduction

Public Health Emergency Management of Ministry of health, Minister of Educational, Minister of Water and Regional health offices with Disaster prevention and preparedness coordination office (DPPC) has planned and implemented rapid Meher season need assessments of 2015.Based on the 2007 census conducted by the central statistical agency of Ethiopia (CSA), the Amhara Region has a population of 17,221,976.Amhara is bordered by the nation of Sudan to the west and the Ethiopian regions of Tigray to north, Afar to the east, Benishangul-Gumuz to the west and southwest, and Oromia to the south. The region has 10 Zones and one special Zone (Bahir Dar) and 3 Town admirations, 167 Woredas and about 3431 kebeles from which are urban kebeles. The existing of Amhara population has been affected by different types of hazards including EI-Nino, the El-Nino effect will be manifested with shortage of rain. A number of Woredas in our country including visited woredas were affected by the shortage of rain which lead to severe drought will further aggravate the already existing poor nutritional status of the most vulnerable group mainly children, pregnant and lactating women and also disease outbreaks.

### Objectives

#### General Objectives

To contribute in ensuring proper and effective humanitarian planning and responses that leads to reducing morbidity and mortality in the most at risk areas of the assessed zones.

#### Specific Objectives

- To assess the extents, types, magnitude, severity and likely of the different hazards (drought, human epidemics, conflict, floods, etc.) and
- To assess the occurrence of different public health emergencies in the most vulnerable Woredas (including to identify the most vulnerable populations).
- To assess the existing capacity of the health services to address the health and nutrition emergencies likely to occur during the first six months of 2016.
- To identify areas where emergency assistance (health and nutrition) might be needed due to acute problems and come up with reasonable estimates of the size of the population needing emergency assistance for the upcoming six months of 2016.
- Based on the findings, to develop emergency preparedness plans for the region

**Methodology**

Health emergency needs assessment has been conducted as part of the 2008 E.C Meher assessment in selected hotspot woredas of East Gojjam and North Shewa Zones of the Amhara region, using the following major data collection methods:

- In-depth Discussion with zonal level disaster prevention and preparedness (DPP) committee, and non-health sectors such as water resources, education and food security coordination and disaster prevention offices and with zonal and woreda level health officials.

  Based on discussion with zonal health department and regional PHEM officers, 7 woredas with relatively high risk of public health emergency were identified. Briefing was conducted at zonal and each assessed districted and debriefing was made on assessment findings to visited districts and zones.
- Review of secondary data against standard national checklists and observation of selected

**Assessed Woredas:-**

**East Gojjam Zone:** Enarj Enawuga
Enbes Saremder
Goncha Siso
Shebel Berenta

**North Shewa Zone:** Kewot
Berehet
Menjar

- Interview was made with regional PHEM officers, Zonal PHEM and malaria officers and health commodities and supply officers, district health office head, district PHEM and malaria officers and other relevant officers at all levels.
- Observation was made at health center level to observe patient flow and management of cases. Thus, we reviewed records and reports at health center level.

**Major findings of the assessment**

**Population**

Seven woredas selected and assessed for health needs from 2 zones (East Gojjam and North Shewa) of Amhara Region. The total population in these Seven Woredas is 732,973 of which 368,965 are males, 364,008 females and 99,235 constitute under five years old children. Enarji Enawga (22.8%) followed by Goncha Siso (20.4%) has the highest population from the entire assessed district. Berehet (4.7%) is the least in population size. The following table shows the population composition in each woredas

**Table 38:** Population compositions of woredas visited during Meher assessment in Amhara region, 2008E.C

| Sir. No | Woreda | Population | | | |
|---|---|---|---|---|---|
| | | Total population | Male | Female | Above 5 |
| **1** | Enarji Enawga | 167,402 | 82,958 | 84,444 | 22,666 |
| **2** | Enbise Sar midir | 133,855 | 66,139 | 67,716 | 18,124 |
| **3** | Goncha Siso | 149,646 | 74,347 | 75,299 | 20,262 |
| **4** | Menjar | 128,879 | 66,918 | 61,961 | 17,450 |
| **5** | Kewet | 118,381 | 60,934 | 57,447 | 16,020 |
| **6** | Berehet | 34,810 | 17,669 | 17,141 | 4,713 |
| **Total** | | 732,973 | 368,965 | 364008 | 99235 |

**Morbidity and Mortality**

According to 2007 EFY report, the top 5 causes of morbidity for Under 5 and above 5 years were different as indicated in table 2 below. In Under 5 children, diarrhea (non-bloody & bloody), pneumonia and acute upper respiratory tract infection were the top three morbidities affecting most children in all woredas. In above 5 years age, acute upper respiratory tract infection, acute febrile illness and Helmentiasis were the top three causes of morbidity. Even though the latrine coverage, utilization and safe water supply coverage of the visited woredas were high, but diarrheal disease was among the top five causes of morbidity, since this contradicts with the findings, it needs survey especially to now the latrine utilization rate of each woredas.

**Table 39:** Top 5 morbidity causes in six Meher beneficiary woredas of North Shewa and East Gojjam zone, Amhara region, 2015.

| Rank | Menjar | Berehet | Kewet | Enbes Saremder | Shebel Berenta | Enareje Enawga | Goncha Siso |
|---|---|---|---|---|---|---|---|
| **For under 5 years** | | | | | | | |
| **1** | Diarrhea | Helmentiasis | AFI | Diarrhea | Diarrhea | pneumonia | pneumonia |
| **2** | Acute upper respiratory infection | AFI | pneumonia | pneumonia | AFI | Diarrhea | Diarrhea |
| **3** | AFI | Acute upper respiratory infection | Diarrhea | Infection of skin | Malaria | Diarrhea(bloody) | Infection of skin |
| **4** | pneumonia | pneumonia | Helmentiasis | Other unspecified diseases of eye | Trauma | Infection of skin | AFI |
| **5** | Other unspecified diseases of eye | Unspecified infections and | Trauma | Helmentiasis | Acute upper respiratory | Acute upper respiratory infection | Intestinal parasitic |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | | parasitic disease | | | infection | | disease |
| | **For above 5 years** | | | | | | |
| **1** | Acute upper respiratory infection | Trauma | AFI | | Helmentiasis | pneumonia | pneumonia |
| **2** | AFI | AFI | pneumonia | Infection of skin | Infection of skin | Diarrhea | Helmentiasis |
| **3** | Typhoid fever | Acute upper respiratory infection | Acute upper respiratory infection | Diarrhea | Other unspecified diseases of eye | AFI | Dyspepsia |
| **4** | Unspecified infections and parasitic disease | pneumonia | Diarrhea | Helmentiasis | Unspecified infections and parasitic disease | Infection of skin | AFI |
| **5** | Other unspecified diseases of eye | Unspecified infections and parasitic disease | Helmentiasis | Trauma | Dyspepsia | Dyspepsia | Infection of skin |

**Cases and Deaths of major Epidemic prone diseases from June –Oct 2015**

**Malaria**

From the total of 4835 malaria cases reported majority of case from Shebel woreda, 1265(26%), second largest malaria case reported from Goncha Siso, 1034(21.3%) and the smallest number of malaria cases were from Berehet woreda, 310 (6.4) in the past five months (June – October).The total number of malaria cases by woreda in the past five months is shown in figure 31.

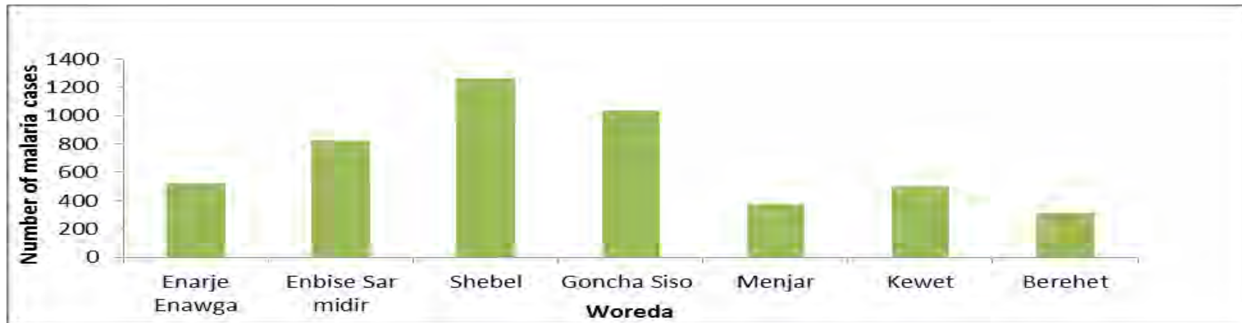



**Figure 30:** Total Malaria cases by Woredas, East Gojjam and North Shewa Zones, Amhara, Ethiopia, January – May 2012.

**Measles:** There were no any reported measles cases in seven Meher beneficiary woredas during June- Oct 2015.

**Acute Water diarrhea (AWD) and Meningitis**: there was no any reported AWD or Meningitis case in the seven Meher beneficiary woredas during the Meher season (June-Oct, 2015). So, to tackle this problem Meningitis and measles Vaccination were undertaken and currently meningitis and measles vaccination is already contained in North Shewa moreover, in East Gojjam only Measles Vaccination were contained. Malaria trend from June to October 2015 is shown in the following graph (see figure 32).

**Figure 31:** Trend of Malaria cases in the assessed woredas, during 2015 Meher Assessment from June to October, Amhara, Ethiopian, 2015.

**Ongoing outbreak**

There was Scabies outbreak in the last 2 months in East Gojjam Zone in five woredas with 116,900 reported cases specifically in 4 assessed woredas, Shebel Berenta 23095 cases 18.1 %, Enbes Saremder 31127 cases 19.8%, Enareje Enawga 55683 cases 27 %, and Goncha Siso 2586 cases 1.49%. Other outbreak was Sever acute malnutrition during Meher season in all seven assessed woredas. At the time of assessment, there are two ongoing outbreaks, in East Gojjam there were Scabies outbreak and Sever acute malnutrition but in North Shewa only Severe acute malnutrition outbreak. On the other hand, there was no any epidemic of Meningitis and AWD in the assessed seven Meher producing woredas in the last five months.

**Risk Factors for Major Epidemic Prone Diseases**

**Malaria:** There were 620665 (65.9%) population at risk for malaria, living in the 131 malarious kebeles. 164000 (96%) of the risk population for malaria were from Goncha Siso and in Enbes Saremder 120589(76%) of the total risk population for malaria. The LLINS coverage of Goncha Siso, Shebel Berenta and Menjar was >80 %. The LLINS coverage of Berehet, Enbes Saremder and Enareje Enawga was 55%, 67.9% and 67% respectively. IRS was conducted in 2015 in all woredas except Enbes Saremder. IRS coverage of Berehet, Enareje Enawga, Kewet and Menjar, was 75%, 72.5%, 60% and 61% respectively. The number of malarious kebeles differs from woreda to woreda; the highest proportion was from, Goncha Siso 38 malarious kebeles followed by Enbes Saremder, 31 malarious kebeles.

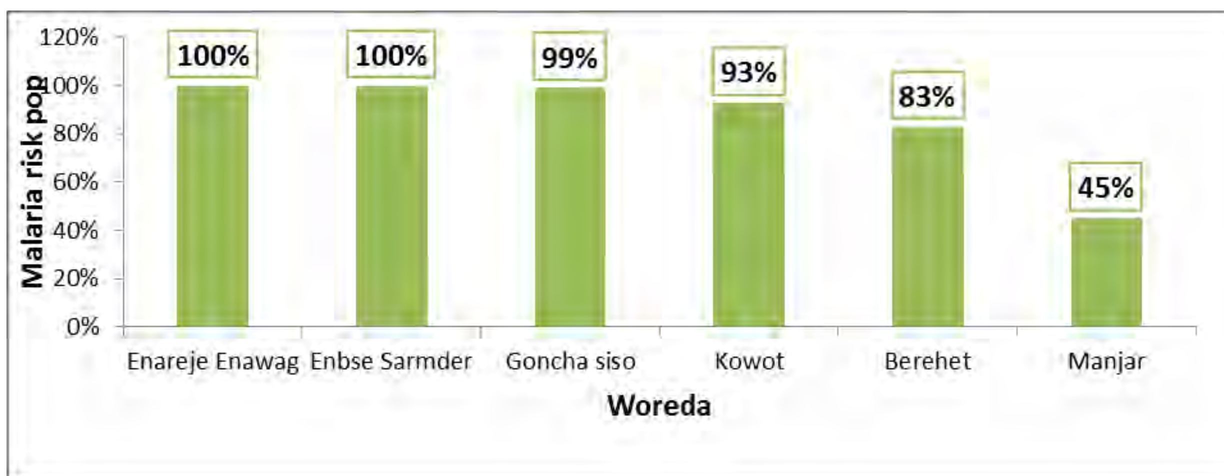



**Figure 32:** Number of risk population for malaria by woredas, Amhara, Ethiopian, 2015

**Measles:** There was no any ongoing outbreak of measles during the assessment time. The average measles vaccination coverage of 2014, < 1year children was >90% in all woredas Except Menjar 45% and Berehet woreda 83.4% but measles recommended efficacy (85%).SIA was not conducted in all woredas. Measles vaccinations were currently contained in East Gojjam and North Shewa zones.

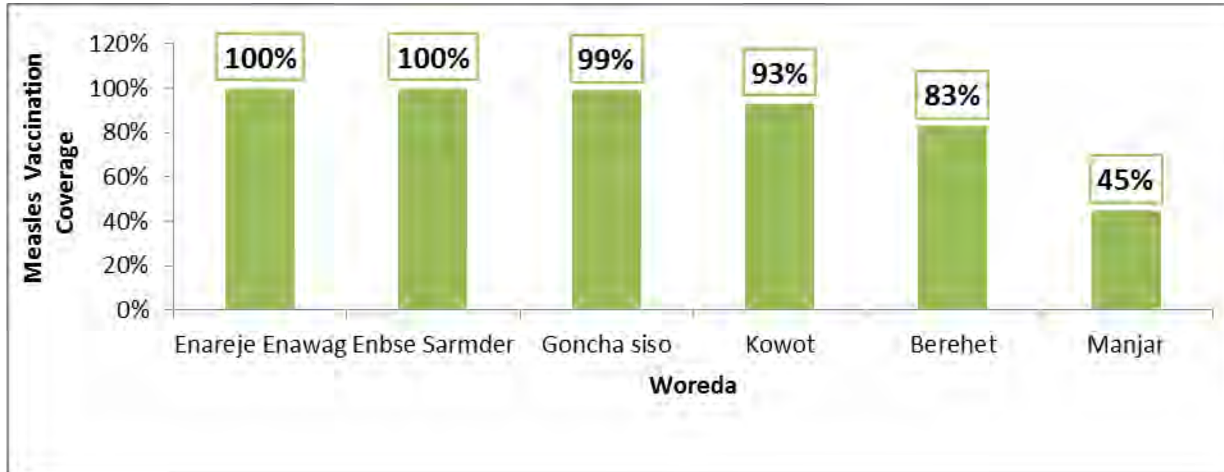



**Figure 33:** Measles vaccination coverage of the seven Meher beneficiary woredas for <1 year children, 2014.

**Preparedness (Emergency Drugs)**

There are no enough emergency drugs and supplies for one month, even emergency essential /tracing drugs were not available at all woredas. However, specifically there was a shortage of supplies:

- ❖ Ringer Lactate in Shebel Berenta, Enareje Enawga, Kewet woredas
- ❖ ORS in Berehet woreda
- ❖ Doxycycline in Enareje Enawga, Shebel Berenta and Berehet woredas
- ❖ Amoxill suspension and Vitamin-A in Berehet, Shebel Berenta, Enbes Saremder(not Vit-A)

Lab supply of RDT (Pastorex) and LP set for meningitis and CTC kit for AWD were not available in all woredas during the assessment time.

**Table 40:** For Scabies treatment in East Gojjam zone, Amhara, Ethiopian, 2015

| No | product | Zone store | Enareje | Enbes | Shebel | Goncha |
|---|---|---|---|---|---|---|
| **1** | Sulfur | 5174 | 2752 | No data | No data | 95 |
| **2** | Ivermectine | 18 | 1146 | No data | No data | No data |
| **3** | BBL 1000ml | 0 | 253 | No data | No data | No data |

**Coordination**

In regional level has functional multi-sectorial coordination forum which conducts meeting every month. But, it is not represented particularly by all relevant government sectors (Education, Agriculture & water). All visited woredas (100%) in have multi-sectorial PHEM coordination forum but it is not active/functional. However, all seven assessed woredas have multi-sectorial PHEM coordination forum but there is not regularly meeting. In all visited district in East Gojjam and North Shewa have public health emergency preparedness and response plan and PHEM plan of woredas, only Enarji Enawga funded.

**Nutrition**

The nutrition situation in all the seven-visited Meher beneficiary woreda was severe. All woredas have rolled out the CMAM service to all health facilities (HPs, HCs & hospitals), which are functional and have the necessary supplies at OTP level but in SC there are gaps we identified. In all woredas have at least one Stabilization center (SC) except in Goncha Siso woreda in East Gojjam and Kewet woreda in North Shewa zone. In addition to this, all woredas heath workers identified, trained and assigned for acute malnutrition case management except Kewet woreda in North Shewa zone all trained health worker resign from their work and there is no trained health worker in woredas. There are 185 OTP and 13 SC (TFU) sites providing CMAM services in the seven woredas. The necessary CMAM supplies are not available in all woredas

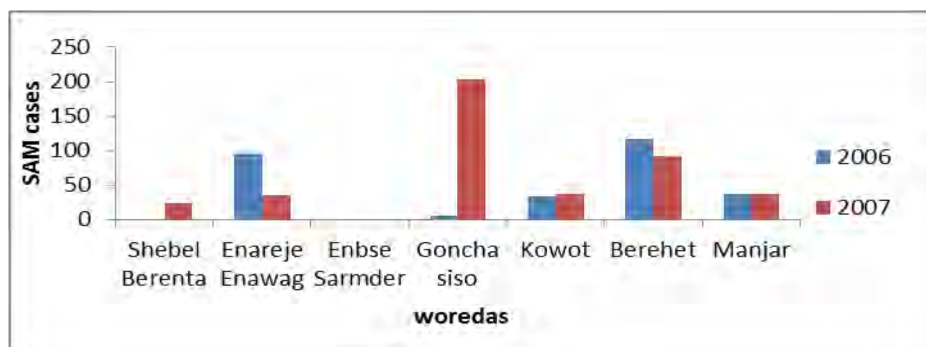



**Figure 34:** Number of SAM cases of the same Meher season 2007 and 2008 EFY, Amhara, Ethiopian.

Generally, monthly nutritional screening coverage for children 6-59 months and Pregnant & Lactating Women (PLW) is very low in all woredas, below the target planned, and cannot represent the situation at the ground since many eligible are not capture.

**Table 41:** For case management critical supplies (F-75, F-100, ReSoMal, antibiotics) for stabilization center form Zonal level up to woreda level, Ethiopian,2015.

| **Woredas** | **< 5 children** | | | **Pregnant ,lactating women (PLW)** | | | |
|---|---|---|---|---|---|---|---|
| | Screened | SAm | MAM | Screened | SAM | MAM | |
| **Berehet** | 5376 | 112 | 508 | 439 | 14 | 33 | |
| **Menjar** | 11673 | 45 | 34 | 2134 | 0 | 0 | |
| **Kewet** | No data | - | - | - | - | - | |
| **Enbes Saremder** | 14265 | 296 | 1006 | 2947 | 0 | 0 | |
| **Enareje Enawga** | 22216 | 25 | 232 | 5997 | 0 | 0 | |
| **Goncha Siso** | 20236 | 206 | 659 | 2195 | 0 | 0 | |
| **Shebel Berenta** | 13137 | 47 | 303 | 3097 | 0 | 0 | |

**Table 42:** Acute severe malnutrition screening in seven woredas in East Gojjam and North Shewa Zones, Amhara region, 2015

| No | Products | Unit | East Gojjam | | | | | North Shewa | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Zonal store | Enareje | Shebel | Enbes | Goncha | Zonal store | Berehet | Kewot | Menjar |
| | RUTF | carton | 926 | 18 | 0 | 60 | 24 | 1087 | 0 | 0 | 28 |
| | F-100 | sachet | 15 | 1 | 0 | 0 | 0 | 10 | 0 | 0 | 82 |
| | F-75 | sachet | 7 | 1 | 0 | 0 | 0 | 0 | 0 | 0 | 132 |
| | ReSoMal | | 2 | 0 | 0 | 0 | 0 | 0 | | | |

**Challenges**

- Malaria remains as a threat in most Meher producing woredas with 620,665 people at risk in woredas and there was LLIT shortage. LLINs not distributed according to the micro plan and as per woredas need.
- AWD and dysentery were major threat in most woredas because of severe water problem in all Meher producing Woredas.
- Rabies also increasing as a potential threat in Menjar woreda.
- During the Scabies, epidemic response in East Gojjam zone, the main challenge was shortage of drug specially sulfur drug for < 2 years children and pregnant for mass treatment, these scarcity was major challenge to control outbreak.
- There are shortage of human resource for emergency response especially health extension worker (HEW) in Menjar woreda, 4 kebeles there is no any HEW.
- Absence of multi-sectorial PHEM coordination forum to manage emergency situations in most visited districts health offices and zonal health department
- Absence of emergency preparedness and response plan and budget/fund and some medical supplies at district and zonal level;
- Absence of trained staff on PHEM in some district
- Low measles immunization performance like Menjar woreda;

- Environmental management for prevention and control of malaria outbreaks was found poor in all districts.
- Shortage of budget ,drugs specially emergency Drugs
- Lastly, there are nutritional problems in all of visited districts in East Gojjam and North Shewa zones.

**Recommendations**

- The RHB and FMOH should find the way to fill the gaps identified as shortage of budget, drugs especially emergency drug.
- Pre-positioning of emergency drugs and supplies and allocating emergency preparedness and response fund at districts should be in place.
- Fund allocation for emergency preparedness should be considered at all level
- Trainings for PHEM staffs in epidemic preparedness planning and outbreak investigation
- Follow up and community awareness should be strengthened for the utilization of LLINS
- Measles vaccination coverage should be increased in most visited woredas and SIA shall be implemented in some areas like Manjra
- Reactivating of emergency preparedness and response meeting forum which involve all stake holders should be strengthened at all levels.
- It is necessary to strengthen all OTP and SI sites through regular and consistent supportive supervision.
- In Menjar Woreda, to reduce these threat (rabies) 193 dogs was killed and there must be vaccination.
- Strengthening the PHEM capacity at all levels is highly recommended

# Chapter VIII – Protocol/Proposal for Epidemiologic Research Project

**ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES**
**SCHOOL OF PUBLIC HEALTH**

**RESEARCH PROJECT SUBMISSION FORM**

| Name of Investigator | Meklit Mekonnen |
|---|---|
| **Name of Advisor(s)** | Pro. Alemayehu Worku, Mrs. Mastewal Worku |
| **Full title of the research projects** | Prevalence of opportunistic infections and associated factors in HIV-positive patients on antiretroviral therapy in Felege Hiwot referral Hospital ,Bahir dar, Amhara Region,Ethiopan,2016 |
| **Duration** | June 1-september 30,2016 |
| **Study area** | Felege Hiwot referral Hospital, Bahir dar, Amhara Region, Ethiopian |
| **Total cost of the project** | 54,465 Eth Birr |
| **Address of investigator** | Tel: +251920517846<br>Mail: makiimekonnen@yahoo.com |

# Complied Body Works

**Summary**

**Background:** Even after Anti-Retroviral Therapy (ART) initiated, many study suggests that OIs remain a challenge in patients receiving ART in Ethiopia, some study was done in Deber Markos Hospital, Gonder referral Hospital and Hiwot Fana specialized university Hospital, Eastern Ethiopia. Therefore, the aim of this study was to assess the prevalence of opportunistic infections (OIs) and associated factors among HIV-infected on anti-retroviral therapy (ART) in Feleg Hiwot referral Hospital, Bahir dar Town, Ethiopia.

**Objectives**: To assess the prevalence of opportunistic infections (OIs) and associated factors among HIV- positive patients taking anti-retroviral therapy (ART) in Feleg Hiwot referral Hospital, Bahir dar ,Ethiopian.

**Methodology**

**Study type:** A hospital- based, Descriptive and analytical cross- sectional study will be conducted.

**Sample and Sampling procedure:** The sample size was estimated using EPI info .A total of 2760 patients will be enroll in ART starting from 2010 to 2015 then select patients that fulfill inclusion criteria from that of 334 will be select by using simple random sampling technique through computer generation number method using their identification number as sampling frame.

**Data collection method:** Data will be collecting by using a checklist, which was adopted from the hospital‟s clinical record format for monitoring HIV/AIDS patients on ART

## Complied Body Works

### Introduction

Since the outbreak of HIV in 1981, an estimated 39 million people worldwide have died and about 35 million are living with the deadly virus with Sub-Saharan Africa suffering the greatest brunt of the epidemic (1).Sub-Saharan African has the most serious HIV and AIDS epidemic in the world. In 2013, an estimated 24.7 million people were living with HIV, accounting for 71% of the global total. In the same year, there were an estimated 1.5 million new HIV infection and 1.1 million AIDS – related deaths (2).

Opportunistic infections remain the single main cause of ill-health and death among HIV-infected patients (4). Research shows that about 90% of HIV-related morbidity and mortality are caused by opportunistic infections compared to 7% due to opportunistic cancers and 3% due to other causes (5). Opportunistic infection are defined as infections that are more frequent or more sever because of immune – suppression in HIV infected persons, and they are the major clinical manifestation of HIV patients (3).The most common opportunistic infection in HIV patients are candida esophagitis, pneumocystis carinii pneumonia (PCP), disseminated Mycobacterium Avium complex (MAC) infection, cytomegalovirus (CMV), Cryptococcus, Kaposi sarcoma, herpes zoster, and tuberculosis (6).when we come to Ethiopian context, the most common opportunistic diseases in HIV patients in Ethiopia are oropharyngeal candidiasis and tuberculosis (TB), followed by diseases of the central nervous system (CNS), sepsis, Pneumocystis carini pneumonia (PCP), bacterial pneumonia, Kaposi‟s sarcoma, and lymphoma . HIV causes progressive depletion of the CD4 T cells, which leads to life-threatening opportunistic infections (OIs) or malignancies during the natural course of the disease. More than 90% of OIs are responsible for the development of AIDS morbidities and mortalities (7).

By end of 2013, about 13million HIV patients had access to HAART globally with 9.2million from middle and low income countries (8). In resource poor settings, HIV positive individuals usually access care and treatment with marked immune suppression associated with a higher risk of OIs whose spectrum and frequencies may vary over time and in different countries or even within the same country(9). OIs lower the quality of life of persons living with HIV/AIDS (PLHA), increases stigma and limits one‟s ability to work and are usually associated with high medical care costs (10). Opportunistic infections consequently have greatly paid to poverty among those diseased and affected by HIV.

Currently there are an estimated 1.5 million people living with HIV/AIDS with about 60% in need of HAART (8). Antiretroviral therapy (ART) increases the length and quality of life and productivity of patients by improving survival, and decreases the incidence of OIs in HIV-infected people through reduction of the viral load and increasing the level of CD4 cells (11). In 2003, the Government of Ethiopia introduced its ART program with the goal of reducing HIV-related morbidity and mortality, improving the quality of life of people living with HIV and mitigating some of the impact of the epidemic. In 2005, Ethiopia launched free ART; over 71,000 were initiated on ART by the end of November 2006 and some 241 hospitals and health centers are now providing HIV care and treatment services in all regions of the country (12). However, OIs continued to cause morbidity and mortality in HIV/AIDS patients even after receiving ART. This mortality occurs because some patients do not have a sustained response to antiretroviral agents for multiple reasons including poor adherence, drug toxicities, drug interactions, or initial acquisition of a drug-resistant strain of HIV-1(13).Therefore, the aim of this study is to assess the prevalence of OIs and identify associated factors in patients taking ART drugs in Feleg Hiwot Referral Hospital in BahirDar Town, Ethiopia.

## Researches Question

This study tries to assess the prevalence of opportunistic infections (OIs) and associated factors among HIV-infected on anti-retroviral therapy (ART) in Feleg Hiwot Referral Hospital in Bahir Dar Town, Ethiopia.

## Literature review

The human immunodeficiency virus (HIV) infection leading to Acquired Immunodeficiency Syndrome (AIDS) causes progressive decline in immunological response in people living with HIV/AIDS (PLWHA) making them susceptible to a variety of opportunistic infections which are responsible for morbidity and mortality (14) A study conducted in Taiwan showed that the prevalence of OIs to be 47.6%(15). In India, cross – sectional hospital based study among 110 people living with HIV/AIDS (PLWHA) at community care center of KIMS, when we see pattern of the opportunistic infections, One or more opportunistic infections were observed in 63 patients (57%).Commonly observed opportunistic infections were pulmonary tuberculosis (52.3%), candidiasis(39%), cryptosporidial diarrhea (30.1%) and PCP (14.2%). In 46.4% cases CD4 count was less than 200.Association between opportunistic infection and level ofCD4 count

was found to be statistically significant ($p<0.05$) . Overall outcome of serostatus disclosure was found to be positive with disclosure rate of 66.4 %( 14).

OIs remain a challenge in patients receiving ART in resource- limited settings. In Nigeria, Out of 339 patients, 76 had diagnosed OIs giving an overall prevalence of 22.4%. There were a total of 96 opportunistic infections diagnosed in the 76 patients. Fifty five (16.2%) patients had single OI, 20 (5.9%) had dual OIs while 1 (0.3%) had triple OIs. The most frequent conditions were candidiasis, 29 (8.6%); TB, 26 (7.7%); dermatitis 19 (5.6%); chronic diarrhea, 5 (1.5%); and sepsis 5 (1.5%). Bacterial pneumonia was diagnosed in 3 (0.9%) patients, cryptococcal meningitis, herpes zoster, genital herpes, and genital warts were each diagnosed in 2 (0.6%) patients while only 1 (0.3%) patient had Kaposi „sarcoma. In relative terms, candidiasis, TB and dermatitis, constituted 38.2%, 34.2%, and 25% of the OIs respectively (16). In other study in Uganda, A total of 204,871 monthly medical reports were retrieved and analyzed. Overall, significant decreasing mean annual prevalence trends were observed for Mycobacterium tuberculosis, herpes zoster, genital ulcer and oral candidiasis ($p < 0.05$, X2 trend). Non-significant declining mean annual prevalence trend was observed for cryptococcal meningitis ($p = 0.181$, X2 trend). The largest impact of HAART was observed in Oral candidiasis and TB whose average annual prevalence reduced by 61% and 43% respectively following the introduction of HAART. Monthly series for TB, Herpes zoster and genital ulcers differed significantly by age and clinic but only genital ulcer series differed significantly by sex ($p < 0.05$, kruskal wallis). After controlling for the effects of age, sex and clinic (fixed) and monthly clustering (random effect) in a mixed effects linear regression model, all the five OIs showed a significant monthly change in prevalence ($p < 0.001$)(10).

A few studies have been carried out on the prevalence of OIs among people living with HIV/AIDS in relation to ART in Ethiopian. A cross-sectional study in Debre Markos Referral Hospital, Northwest Ethiopia assessed the prevalence and associated factors of opportunistic infections among HIV Positive Patients. The study found that 141 (33.3%) of HIV patients taking ART had got at least one OI during the study period and overall OIs prevalence of 42.8% with repeated infection. When compared with other similar studies, the prevalence of OIs in the current study area is comparable with a study conducted by Manosuthi et al. in a resource limited setting with a prevalence of 30%, the independent variables were found to have association with occurrence of OIs in bivariate analysis were age less than 40 years old were 0.47 times less likely

to acquire OI than patients at older ages (COR=0.47, 95%CI=0.29, 0.74), educational status of primary education was preventive compared to non-educated patients (COR=0.590, 95%CI=0.356, 0.978), patients at baseline WHO stages III&IV were at high risk of OI development after ART initiation too, (COR=6.343, 95%CI=3.183, 12.64), patients who used to chew khat was found to be at risk for OI occurrence(COR=3.00, 95%CI=1.12, 8.06), good ART adherence was preventive for OI occurrence (COR=0.20, 95%CI=0.09, 0.45), and patients with a base line CD4 count of less than 200 cells/µl were almost double risk of OI development than their counter parts with higher CD4 count at baseline (COR=1.91, 95%CI=1.16, 3.14)(17).

A hospital – based retrospective study in Hiwot Fana specialized university Hospital, Eastern Ethiopian identified, there was a high prevalence of OIs observed in this study. Baselines CD4 count of less than200 cells/$mm^3$, advanced WHO clinical stages and not using prophylaxis were found to be predictors of OIs. Interventions were aimed at promoting early HIV testing and enrollment of HIV-infected individuals into ART services needed before CD4 count decreased severely and there were 12 co-infections of different OIs observed in the current study. Of these, 58.3% (n=7/12) were TB and oral candidiasis co-infections (13). This finding is in agreement with a report from Gondar, Ethiopia, which reported 50% TB and oral candidiasis co-infections (18).A higher proportion of TB and oral candidiasis co-infection in the current study might be explained by a higher prevalence of these two OIs among the study participants. Dual and triple OIs were also reported from studies conducted in Debre Markos, Ethiopia and Nigeria (13&19).

Mycobacterium tuberculosis is the leading cause of morbidity and mortality among people living with HIV worldwide. The published reports about seroprevalence of HIV among tuberculosis patients give highly variable rates worldwide. In Indian Prevalence of HIV infection among different categories of tuberculosis patient‟s .Prevalence was 1.86% in the bacillary positives, 0.71% in abacillary and 1.52% in extra-pulmonary tuberculosis patients (20).

In Ethiopia, the co-infection rate is 20%–50%, creating a dual epidemic of symptomatic HIV infection and TB. TB enhances progression of HIV infection by inducing immune activation. In addition, HIV increases the risk of infection as well as reactivation of latent TB. Hence, it is conceivable that TB can occur across the clinical spectrum of HIV infection (7). The study also revealed that TB infection is the predominant OI identified, with a prevalence of 21.23% (76/358), following TB, Herpes zoster and oral candidiasis were the second and the third most prevalent OIs in the present study, at 11.2% (40/358) and 9.5% (34/358), respectively(13).

# Complied Body Works

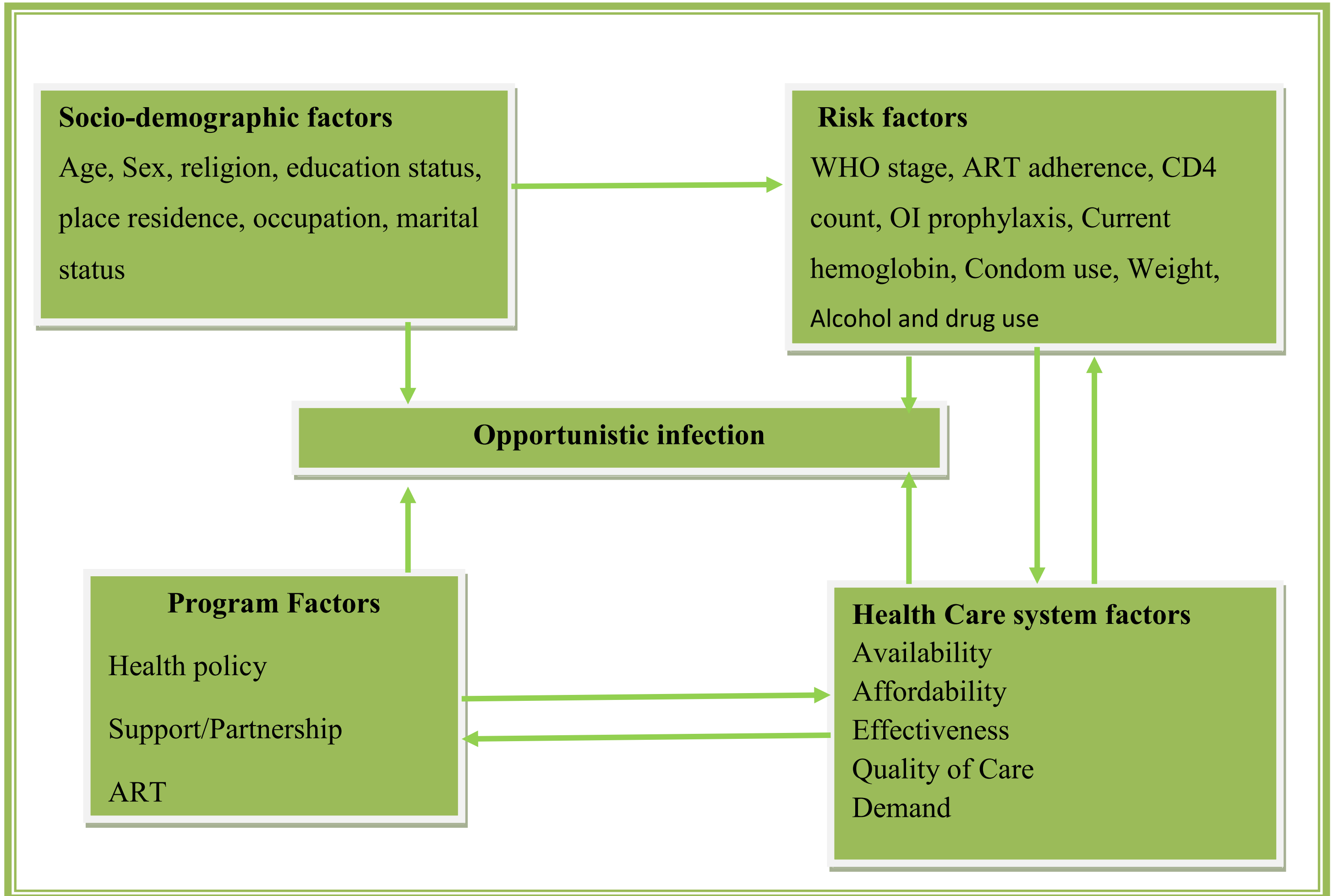
**Statement of problem**

People with health immune systems can be exposed to parasites, viruses, bacteria and have no reaction to them but people living with HIV/AIDS can face serious health threats from opportunistic infection. Since the introduction of Highly Active Anti-retroviral Therapy (HAART), a significant decline in OIs but still, OIs continued to cause morbidity and mortality in HIV/AIDS patients even after receiving ART. This mortality occurs because some patients do not have a sustained response to antiretroviral agents for multiple reasons. In our context individuals who continue to have low CD4 cell counts while on ART and Prophylaxis was not implemented in the routine management of people living with HIV, irrespective of ART use was main causes for HIV patients develop opportunistic infection.

**Study Rational**

In the years of highly active ART (HAART), a significant decline in the magnitude of OIs as well as overall morbidity and mortality in HIV-infected populations have been proved in various populations. However, available reports suggest that OIs remain an important cause of morbidity and mortality in PLHIV in the era of HAART in several populations. Considering that access to HAART and optimization of antiretroviral treatment options have not been uniform among HIV-infected populations across various socioeconomic states. Additionally, many studies was done in HIV/AIDS concentrated on prevalence of HIV, drug adherence and survival but limited studies are evident on OIs after Anti-Retroviral Therapy (ART) initiated, many study suggests that OIs remain a challenge in patients receiving ART in Ethiopia, especially in Feleg Hiwot Referral Hospital .some study was done in Deber Markos Hospital, Gonder Referral Hospital and Hiwot Fana specialized university Hospital, Eastern Ethiopian. Therefore, the aim of this study was to assess the prevalence of opportunistic infections (OIs) and associated factors among HIV-infected on anti-retroviral therapy (ART) in Feleg Hiwot referral Hospital, Bahir dar Town, Ethiopia.

**Conceptual Framework: Opportunistic Infection in HIV patients**




**Objective**

**General Objective**

To assess the prevalence of opportunistic infections and associated factors among HIV- positive patients taking anti-retroviral therapy (ART) in Feleg Hiwot referral Hospital, Bahir dar ,Ethiopian.

**Specific Objective**

- ✓ To determine the magnitude of opportunistic infection among HIV patients
- ✓ To assess factors associated with opportunistic infections
- ✓ To describe functional status of patients and prophylaxis, WHO clinical staging,CD4 cell count, hemoglobin level and weight and other clinical parameters

## Methods and Materials

### Study area and period

The study will be conducted in Feleg Hiwot Referral Hospital among HIV-positive patients taking anti-retroviral therapy (ART) in Bahir Dar town, North western Ethiopian. It is the capital of the Amhara Region. The city is located approximately 578 km North-Northwest of Addis Ababa, having a latitude and longitude of 11036�
N37023�
E and elevation of about 1,800 meters (5906 feet) above sea level. Based on the 2008 E.C census conducted by the central statistical agency of Ethiopian (CSA), Bahir dar special zone has a total population of 311,724 from this 163,939 female and 147,785 male. Feleg Hiwot Referral Hospital established in 1952 E.C and the estimated catchment population of the hospital is around 6 million people. The hospital has 410 beds offering different specialized services including ART services in its ART clinic. The hospital started to provide HIV care and treatment service since Felege-Hiwot Referral Hospital is one of the government-sponsored ART centers at Bahir Dar Town in 1995 E.C. The ART clinic provides follow-up service for pre-ART for 11476 patients and patients who are on ART to both pediatrics and adults (6025 patients) by specialists and trained health professionals. It provides the ART service for those HIV patients who are found in Bahir Dar and its vicinity. In addition, the hospital accepts ART referred patients from different parts of the region. The study will be conducted from Jun1 to September 30, 2016.

### Study Design

A hospital- based, Descriptive and analytical cross- sectional study will be conducted.

### Source of population

All Feleg Hiwot Referral Hospital patients

### Study population

All adult HIV positive individuals‟ record on care and support follow up who had started ART at Felege Hiwot Referral Hospital ART clinic during study period.

### Variables

### Dependent Variables

Opportunistic infection

### Independent Variable

Socio-demographic factors (age, sex, income, religion, education status, place residence, occupation and marital status)

Associated risk factors (Baseline WHO stage , Chat use , ART adherence , Alcohol use , Cigar rate smoking, Baseline CD4 count, OI prophylaxis give, Current hemoglobin, Condom use , Recent weight)

**Inclusion and Exclusion Criteria**

**Inclusion Criteria**

HIV-positive patients taking anti-retro viral treatment (ART) in Feleg Hiwot Referral Hospital with in 2010 -2015 period of time

**Exclusion criteria**

Pre ART, Transfer out, lost, drop

**Operational definition (taken from ART registration card)**

**Lost to follow up:** Not seen since >/= 1 month < 3 months.

**Drop:** Lost to follow up for >3 months.

**Transfer out:** A patient is referred to another health facility for care as evidenced by his/her document.

**Adherence**

Adherence is defined as good if adherence is >95% (<2 doses of 30 doses or <3 dose of 60 dose is missed) as documented by ART physician; poor if adherence is between 85%-94% (3-5 doses of 30 doses or 3-9 dose of 60 dose is missed) as documented by ART physician; as documented by ART physician.

**Sample size determination**

Sample size was calculated using for two –population proportion for a cross – sectional survey based Epi- info statcalc formal:-

Two-side Confidence level = 95%

Power = 80%

Ratio (Unexposed: Exposed): 1

% outcome in unexposed group: 42.8%

Risk ratio: 1.3

Odd Ratio: 1.9

% outcome in exposed group: 58.7%

Sample size =334

**Sampling technique**

A total of 2760 patients will be enroll in ART starting from 2010 to 2015 then select patients that fulfill inclusion criteria from that of 334 will be select by using simple random sampling technique through computer generation number method using their identification number as sampling frame.

**Data collection method**

A structured questionnaire will be used to collect data about socio demographic, clinical and laboratory parameters. For the clinical and laboratory information, available baseline data at the time of initiation of HAART will be first captured including date of HIV diagnosis, WHO clinical stage, body mass index (BMI), CD4 cell count, and hemoglobin concentration. For each participant, detail history and physical examination will be carried out to identify features suggestive of on-going OIs. Irrespective of the presence of OI, every participant had blood sampling for current CD4 cell count and hemoglobin tests. Depending on the specific clinical diagnosis of OI will be made, appropriate investigations such as sputum acid fast bacilli (AFB), chest x-ray, stool microscopy, cerebrospinal fluid (CSF) analysis; blood, sputum and urine cultures as well as tissue histology will be carried out to confirm the diagnosis where possible. The laboratory results will be captured as soon as they were available. Individuals diagnosed to have any OI will be referred for appropriate treatment.

**Data quality control**

The data collection format will be check for its completeness and consistency with the patient"s clinical records by a supervisor on a daily basis. Training will also be given for nurses for detail data collection procedures, then pretest will also be conducted before the actual study started.

**Data processing and analysis**

After complete the data collection, before to the analysis the data will be cleaned, coded and entered. Hence the data will be entered in Epi-info version 7 and analysis will be doing by using statistical package for social sciences (SPSS) version 20. Bivariate analysis and multivariate logistic regression analysis will be used to estimate the association of each independent variable with the dependent variable (Opportunistic infection). 95%CI and p-value less than 0.05 considered as significant association. In conclusion, the results will be presented with tables, graphs and figures.

## Complied Body Works

**Ethical Consideration**

The study will be conducted after ethical clearance from school of public health (SPH) and Addis Ababa University Medical faculty Institution Review Board. Supporting letter will also be written by SPH to Feleg Hiwot Referral Hospital, Bahir dar. Confidentiality of the information will be assured and privacy of the information will also maintain. Additionally, informed consent will be developed in Amharic and we will ask for the interviewees their consent to take part in the study .They will be enrolled in the study if they decide to do so. They have also the right and the freedom to withdraw them from the study and are not obliged to answer all of the questions.

**Dissemination of the result**

The research findings will be submitted to Addis Ababa university school of public health (SPH) and disseminated to Feleg Hiwot Referral Hospital, Bahir dar Special Zonal health Department, Regional Health Office, Federal Minister of Health and other fund rising bodies. Therefore they can use the results for planning and implementation of intervention programs.

**Work Plan (Project Management)**

| Sir No | Activities | February | March | April | May | June | July |
|---|---|---|---|---|---|---|---|
| 1 | Topic selection | | | | | | |
| 2 | Proposal writing | | | | | | |
| | Submission to advisor | | | | | | |
| | Final proposal submission (To advisors and the school: Academic coordinator | | | | | | |
| 3 | Approval | | | | | | |
| 4 | Ethical Clearance | | | | | | |
| 5 | Training to data collectors (nurse) | | | | | | |
| 6 | Data collection | | | | | | |
| 7 | Data entry | | | | | | |
| 8 | Data analysis and interpretation | | | | | | |
| 9 | Report writing | | | | | | |
| 10 | Final Draft writing and submission | | | | | | |
| 11 | Final thesis report | | | | | | |
| 12 | Final thesis defenses | | | | | | |

## Complied Body Works

**Budget break down**

| | | Budget title | Qualification | Quantity | Rate | Duration | Total Cost |
|---|---|---|---|---|---|---|---|
| | Personnel cost | Principal Investigator | EFETP Resident | 1 | 400 | 30 | 12,000 |
| | | Data collectors | Nurses | 3 | 200 | 30 | 18,000 |
| | | Supervisor | Health officer | 1 | 200 | 30 | 6,000 |
| | | Laboratory | Med.Labortatory Techs | 2 | 200 | 10 | 2,000 |
| | | Technical Advisor | Microbiologist | 1 | 200 | 10 | 2,000 |
| | | Assistants for data collectors | Hospital Porter | 2 | 100 | 30 | 6,000 |
| | | Training for data collectors | Nurses | | 200 | 2 | 1200 |
| | Sub Total | | | | | | 47,200 |
| | Material and supplies | Pen | | 10 | 5 | | 50 |
| | | Paper(A4 Size) | | 2 pack | 400 | | 800 |
| | | Printing and duplication | | 500 | 1 | | 500 |
| | | Blank WR-CD | | 10 | 10 | | 100 |
| | | Glove | | 7 | 150 | | 1050 |
| | | Soap | | 10 | 12 | | 120 |
| | | 70% alcohol | | 2lit | 45 | | 90 |
| | | Cotton | | 3 roll | 30 | | 90 |
| | Sub total | | | | | | 2,800 |
| | Total amount | | | | | | 50,000 |
| | 10% Contingency | | | | | | 4465 |
| | Grand Total | | | | | | 54,465 |

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## ASSURANCE OF PRINCIPAL INVESTIGATOR

The undersigned agrees to accept responsibility for the scientific ethical and technical Conduct of the research project and for provision of required progress reports as Per terms and conditions of the Research Publications Office in effect at the time of Grant is forwarded as the result of this application.

Name of the student: Meklit Mekonnen

Date ------------------ Signature ---------------------

**Approval of the primary Advisor**

Name of the primary advisor: Pro. Alemayehu Work

Date ----------------- Signature ------------------

**Annex 5: Dummy tables on socio demographic and risk factors of opportunistic infection among HIV-positive patients taking anti-retro viral treatment (ART) in Feleg Hiwot Referral Hospital, Bahir Dar town, Amhara Region, Ethiopian**

1. Socio Demographic characteristics, among HIV-positive patients taking anti-retro viral treatment (ART) in Feleg Hiwot Referral Hospital, Bahir Dar town, Amhara Region, Ethiopian,2016

| Characteristics | Frequency | Percentage |
|---|---|---|
| Sex | | |
| Male | | |
| Female | | |
| Age | | |
| 15-24 | | |
| 25-34 | | |
| 35-44 | | |
| 45 – 54 | | |
| >54 | | |
| Religion | | |
| Orthodox | | |
| Muslim | | |
| Other | | |
| Level of education | | |
| No education | | |
| Primary | | |
| Secondary | | |
| Tertiary | | |
| Occupation | | |
| Student | | |
| Farmer | | |
| Marital Status | | |
| Never married | | |
| Married | | |
| Divorced | | |
| Widowed | | |

2. Prevalence of opportunistic infections among HIV –positive patients taking anti-retro viral treatment (ART) in Feleg Hiwot Referral Hospital, Bahir Dar town, Amhara Region, Ethiopian,2016

| **S.No.** | **Opportunistic infection** | **Frequency** | **Percentage** |
|---|---|---|---|
| **1** | Tuberculosis | | |
| **2** | Diarrhea ( > 1month) | | |
| **3** | Fever ( >1month; unexplained) | | |
| **4** | Oral candidiasis | | |
| **5** | Pharyngeal Candidiasis | | |
| **6** | Wasting Syndrome | | |
| **7** | Pneumocystis carinii Pneumonia | | |
| **8** | Pneumonia(recurrent) | | |
| **9** | Cryptococalmeningitis | | |
| **10** | Minor mucocutaeousmanifestations | | |
| **11** | Herpes – simplex (> 1 month ) | | |
| **12** | Toxoplasmosis | | |
| **13** | Kaposi Sarcoma | | |

3. Number of Opportunistic infection of diagnosed per patient among HIV-positive patients taking anti-retroviral treatment (ART) in Feleg Hiwot Referral Hospital, Bahir Dar town, Amhara Region, Ethiopian, 2016

| **S.N.** | **No of Opportunistic infection** | **Frequency** | **Percentage** |
|---|---|---|---|
| **1** | 1 Opportunistic infection | | |
| **2** | 2 Opportunistic infection | | |
| **3** | 3 Opportunistic infection | | |
| **4** | 4 Opportunistic infection | | |
| **5** | >4 Opportunistic infection | | |
| **Total** | | | |

4. Distribution of cases according to presenting symptom among HIV –positive patients taking anti-retro viral treatment (ART) in Feleg Hiwot Referral Hospital, Bahir Dar town, Amhara Region, Ethiopian,2016

| Symptoms | Frequency | percentage |
|---|---|---|
| Cough and Dyspnea | | |
| Diarrhea | | |
| Nausea and or vomiting | | |
| Wight Loss | | |
| Fever > 1 month | | |
| STI symptom | | |
| Dysphagia | | |
| Night sweat | | |
| Persistent Headaches | | |
| Mental confusion | | |

5. Logistic regression analysis of risk factors for opportunistic infections among HIV –positive patients taking anti-retroviral treatment (ART) in Feleg Hiwot Referral Hospital, Bahir Dar town, Amhara Region, Ethiopian

| Characteristics | Frequency (%) | Opportunistic infections | | COR(95% CI), P-value | AOR(95% CI), P-value |
|---|---|---|---|---|---|
| | | Yes (%) | No (%) | | |
| Age | | | | | |
| 15 – 24 | | | | | |
| 25 – 34 | | | | | |
| 35 – 44 | | | | | |
| 45 – 54 | | | | | |
| >54 | | | | | |
| Marital Status | | | | | |
| Never Married | | | | | |
| Married | | | | | |
| Divorced | | | | | |
| Widowed | | | | | |
| WHO clinical Stage | | | | | |
| I Stage | | | | | |
| II Stage | | | | | |
| III Stage | | | | | |
| IV Stage | | | | | |
| Co – trimoxazole prophylaxis | | | | | |
| Yes | | | | | |
| No | | | | | |
| CD4 Count (Cells/$mm^3$ ) | | | | | |
| < 200 | | | | | |
| 200-500 | | | | | |
| >500 | | | | | |
| Functional Status | | | | | |
| Working | | | | | |
| Ambulatory | | | | | |
| Bed ridden | | | | | |

**Annex 6 : Information sheet and consent form**

Information sheet

Hello! My name is _______________. We are working to assess prevalence of Opportunistic infection and risk factors for opportunistic infection among HIV –Positive patients. This study tries to identify which factors are contributed to opportunistic infection and which type of opportunistic infection more prevalent. I am one of the data collectors and I am asking you some questions. Would you please cooperate in responding the following questions? As your participation is very important to the outcome of the study I kindly request you to give me your sincere and truthful answers your response never be exposed to any party without your consent and it is possible not to tell your name. There is no obligation to participate in the study. You have full right to refuse participation, refrain during interview and decline from answering to some or more of the question if you don"t like to answer them.

Yes --------------------- No ---------------

Thank you

Consent form

I have been briefly informed about the study and clearly understood the objective of the study.

So I, here approve my consent with my signature to take part in the study

Signature-------------------- Data---------------

Name of data collector ---------------------------- Signature------------------

Name of supervisor -------------------------------- Signature -----------------

**Annex 7 : Questionnaire for research project**

| Code ----- | Data ---------------- | |
|---|---|---|
| **Section One : Socio demographics** | | |
| 01 | Sex | Male ---------------------------- 1<br>Female ------------------------- 2 |
| 02 | How old are you? | [-----] Age in years |
| 03 | Religion | Orthodox ------------------- 1<br>Muslim ---------------------  2<br>Protestant ------------------- 3<br>Catholic --------------------  4<br>Other/specify ---------------- 5 |
| 04 | Educational status | Illiterate --------------------- 1<br>Primary (1-8) ---------------2<br>High School and preparatory ( 9-12) ----------------------- 3<br>Tertiary and above ------------------------- 4 |
| 05 | Residence | Urban --------------  1<br>Rural --------------   2 |
| 06 | Occupation | Government Employed -----------------------1<br>Private Employed ----------------------------- 2<br>Daily Laborer ---------------------------------  3<br>Farmer --------------------------------------  4<br>Merchant -------------------------------  5<br>Other --------------------------------- 6 |
| 07 | Marital Status | Single ---------------------------- 1<br>Married -------------------------  2<br>Divorced ------------------------  3<br>Widowed ------------------------ 4 |
| **Section two : Past and Present illness** | | |
| 01 | Past and present opportunistic illness | Pulmonary ☐ TB<br>Cryptococalmeningitis ☐<br>TB – Extrepulmonary ☐<br>pharyngeal candidiasis ☐ |

| | | |
|---|---|---|
| | | Fever (> 1 month: unexplained)<br>wasting syndrome<br>Diarrhea (1 > 1 Month)<br>Pneumocystis carinii pneumonia<br>Oral candidiasis<br>Pneumonia (Recurrent) |
| 02 | Presenting symptom | Cough Weighting Loss<br>Mental confusion Night sweat<br>Dyspnea STI symptoms<br>Fever > 1 month Dysphagia<br>Diarrhea persistent headaches<br>Nausea and/or Vomiting Other ----------------- |
| **Section Three : Assessment of patient status** | | |
| 01 | Co- trimoxazole prophylaxis | Yes --------------------- 1<br>No -----------------------2 |
| 02 | Functional Status | Working ------------------- 1<br>Ambulatory ----------------- 2<br>Bed ridden ------------------ 3 |
| 03 | WHO HIV clinical stage | WHO Stage I ---------------- 1<br>WHO Stage II ---------------- 2<br>WHO Stage III ------------------3<br>WHO satge IV ------------------ 4 |
| 04 | Eligible for ART | YES ------------------- 1<br>No ---------------------- 2 |
| 05 | If Yes for 04 question eligible criteria for ART | Clinically (WHO Staging -3 &4 stage) ------------------------ 1<br>CD4 count less than or equal to 500 --------------------- 2<br>Pregnancy ------------------------------- 3<br>Discordant couple --------------------- 4<br>Transfer in ------------------------- 5 |
| 06 | ART Adherence | Good --------------------- 1<br>Fair ------------------------ 2<br>Poor --------------------- 3 |
| 07 | Baseline CD4 count | ---------------------- |
| 08 | Current Hemoglobin level | ---------------------- |

| 09 | Recent Weight and height | --------------------- and ----------------- |
|---|---|---|
| **Section Three : Risk Facotrs** | | |
| 01 | Are you drinking alcohol? | Yes -------------------- 1<br>No ---------------------- 2 |
| 02 | Are you smoking cigarrate? | Yes --------------------- 1<br>No ----------------------- 2 |
| 03 | Are you chewing Chat? | Yes --------------------- 1<br>No ------------------------2 |
| 04 | Are using condom? | Yes -------------------- 1<br>No --------------------- 2 |

# Chapter IX – Other Additional Output Reports

## 9.1 Emergency Health Nutrition preparedness (EHN) status in Enbes Saremder, Enareje Enawga, and Shebel Berenta woredas , East Gojjam Zone , Amhara region , Ethiopian, August 2015

In 2015 the global climate information indicated that there will be an EI- Nino effect which affects many countries globally including Ethiopia. The EI – Nino effect will be manifested with shortage of rain. A number of woredas in our country will be affected by the shortage of rain which leads to severe drought will further exacerbate the already existing poor nutritional status of the most vulnerable group mainly children, pregnant and lactating women. Therefore, strong preparedness and response and successful management of emergency health and nutrition program management are required at all levels.

The objectives of this task was to ensure that emergency health and nutrition preparedness is in place ,appropriate response is given to , implementation is monitored in all the affected woredas.

Since we have started to support the EHN preparedness activates which are undertake in highest priorities district as well as Kebeles .A number of activates have been done the key tasks which are being carried out are described as follow ;-

- Coordination and cooperation
- Grading for all districts EHN preparedness status assessment tools
- Sensitization and Training
- Rapid Nutritional assessments at highly affected Kebeles

## Complied Body Works

**Table 43 :** Nutrition Hotspot woredas in East Gojjam Zone, Amhara Region, Ethiopian, 2015

| Hotspot Woreda | Rank | Total Kebeles (#) | Hotspot Kebeles (#) | Hotspot kebeles pop (#) |
|---|---|---|---|---|
| Enbes Saremder | 1 | 33 | 26 | 113,010 |
| Shebel Berenta | 1 | 19 | 19 | 122,821 |
| Enareje Enawuga | 1 | 25 | 9 | 92,142 |
| Hulet Eju Ensey | 2 | 44 | 14 | 75,233 |
| Goncha siso Ensey | 2 | 37 | 13 | 57,343 |
| Debay Tela | 2 | 21 | 0 | 0 |
| Enemay | 2 | 24 | 1 | 4,495 |
| Dejen | 2 | 21 | 5 | 29,339 |
| Total | 2 | 224 | 85 | 494,381 |

**Revitalizing coordination and cooperation**

We have briefed all districts heath officers and districts administrator offices about the aim of our visits, we told them about the need for revitalizing EHN task force ,the members to be included like( Agriculture, School, Water etc..) and main duties and responsibilities of task forces. They said that there was very pleased of the concern of federal government and they will do whatever it takes time to do anything for the community.

**Zonal Level Coordination committee**

- Name:-Disaster prevention preparedness Committee
- Chairperson:- Zonal administration office
- Members of coordination committee
- ✓ Agriculture Officer (member)
- ✓ Disaster prevention and preparedness(secretary)
- ✓ Zonal administration office (Chairperson)
- ✓ Educational Office( member)
- ✓ Agriculture Office (member)
- ✓ Zonal Health office (member)
- ✓ Water Office( member)
- ✓ Women uses and children office ( member)

- ✓ Land management ( member)
- ✓ Food security office (member)
- ✓ Trade officer( member)
- ✓ Finance Officer (member)

**Zonal Level Coordination committee**

- ❖ Ever week Committee meeting
- ❖ Minutes were available
- ❖ Common agendas of the committee meeting
- ✓ Water problem
- ✓ Crop production problem
- ✓ Shortage of budget ( critical supply)
- ✓ Screening of high risk people for food insecurity

**Zonal Level Technical committee**

- ❖ Technical committee available
- ❖ Types of Technical committees
- ✓ Agriculture office (chairperson)
- ✓ Early warming (secretary)
- ✓ Health Office (member)
- ✓ Administration and security (member)
- ✓ Food security (member)

**Woreda Level Coordination committee**

- ❖ Name:-Disaster prevention preparedness Committee
- ❖ Chairperson:- Woreda administration office
- ❖ Members of coordination committee
- ✓ Woreda administration office (Chairperson)
- ✓ Agriculture Officer (member)
- ✓ Educational Officer( member)
- ✓ Water Officer( member)
- ✓ Women uses and children office ( member)
- ✓ Land management ( member)
- ✓ Food security (member)

- ✓ Trade officer( member)
- ✓ Finance Officer (member)

**Grading for all districts EHN preparedness status assessment tools**

Grading will be make to evaluate the status of preparedness at each level, so based on that when all three districts Enbes Saremder have 78% grade (Yellow) these indicate that it is good preparedness but they have waiting more work to be done. On the other hand Enareje Enawga district have 48% grade (red) these means totally they was not readiness for EHN so we have to do more work on this districts. There was an Emergency Health and Nutrition Preparedness Status Assessment Tool. The purpose of the assessment is to check the functional ability of the various elements, either singularly or interactively as applicable, to respond to any health and nutrition related emergencies.

Key preparedness assessment components are:

1. Overall coordination [20]
2. Human resource for emergency response [15]
3. Communication and Social mobilization- public awareness and community engagement [10%]
4. WASH - water, hygiene and sanitation [10%]
5. Case management – In-patient case management, Out-patient case management, Supplementary feeding [20%]
6. Epidemiological Surveillance [10]

Grading for each of the assessment components: Grading will be making in colour code,

1. Red (<50%),
2. Yellow (50-80%) and
3. Green (>80%)

Finally, overall grading will be making to evaluate the status of preparedness at each level.

**Table 44 :** Grading for all districts EHN preparedness status assessment tools in Hotspot Woredas East Gojjam Zone, Amhara Region, 2015

| Hot spot woredas | Grading |
|---|---|
| **Enbes Saremder** | **76.5 % (Yellow)** |
| **Enarji Enawuga** | **48.5 % (Red)** |
| **Shebel Berenta** | **46.5 % (Red)** |

## Complied Body Works

### Sensitization and Training

We gave orientation on EHN for woreda PHEM officers, Nutritional officers, District health officers and Districts administrator officers. The themes in our talk were current update on EHN, weekly SAM report in OTP and SC center up to Federal level. On the other hand, give training for SAM management for health center staff and HEW for 1-3 days, EHN taskforce duties and responsibilities of stakeholder in undertaking preparedness activists, in all health centers there are no SC except Merto Lemariyam Health Center, Enbes Saremder Woreda .So we have to established SC in all health center.

**Table 45 :** Availability of Malnutrition Management and surveillance Trained human power in hotspot woredas East Gojjam Zone, Amhara Region, 2015

| Hotspot woreda | No of trained | Clinician (physician ,Health officer, Nurse) | Surveillance officers |
|---|---|---|---|
| Enarji Enawuga | 14 | 12 | 2 |
| Enbes Saremder | 20 | 17 Nurse | 3 |
| Shebel Berenta | 15 | 12 Nurse | 3 |

### Rapid Nutritional Assessment (RNA)

RNA can be under take as a part of initial assessment to obtain an overview of the nutritional situation, and determine areas and population groups affected by emergency. We observe that in Enbes Saremder, Shebel Berenta and Enareje Enawga woreda so many people and animal affected by drought and some people in Enbes Saremder woreda people were migrate and dead. so we need urgently under take RNA .So MUAC screening done in all affected Kebele , Facilitating the focus group discussion with in the communities by HDA for creating conducive environment as well as Transect walk was carried out in all affected kebeles.

**Social mobilization**

- There is no any social mobilization committee
- There is no Social Mobilization plan
- It is not established Target group for Social Mobilization
- Indicate mechanism of social mobilization
- There is no HAD and local networks awarded on EHN

**Table 46 :** Number of Social mobilization in Hotspot Woredas east Gojjam Zone, Amhara region, 2015

| Hotspot woredas | No of HDA | No of Edir | No of Ekub | Other |
|---|---|---|---|---|
| Enarji Enawuga | 1215 | No Data | No Data | No Data |
| Enbes Saremder | 971 | No Data | No Data | No Data |
| Shebel Berenta | 764 | No Data | No Data | No Data |

**Wash**

- Availability of wash committee
- Availability of plan and TOR
- Total number and types of woreda water

**Table 47 :** Number of and types of waters in Hotspot woredas East Gojjam Zone, Amhara Region, 2015

| Hotspot Woredas | Spring | Hand dag well | Shallow well | Deep well | Total | Protected | Functional |
|---|---|---|---|---|---|---|---|
| Enarji Enawuga | 127 | 394 | 3 | 3 | 527 | 527 | 527 |
| Enbes Saremder | 349 | 239 | - | - | 588 | 588 | 588 |
| Shebel Berenta | 82 | 250 | 4 | 218 | 554 | 554 | 554 |

**Scabies**

Human scabies is a microscopic mite that burrows into the upper layer of skin where it lives and lays its eggs. Community settings such malnutrition, poor hygiene and other disasters are at increased risk of scabies outbreaks. Scabies is transmitted primarily through prolonged, direct skin-to skin contact with an infected person, and may also be transmitted through shared clothing, towels, bedding, linens, carpets, and furniture. Scabies outbreak was seen mainly in

three hotspot woredas, for controlling outbreak we did outbreak investigation and community with prevalence less than 15% the advised treatment will be individual and contact (family member) management. But prevalence rate was great than15%, we need to give mass treatment for all population based on prevalence rate. Treatment was given for adult 25% BBL once per day for 3 days or for children above 2 Years old 12.5% BBL once per day for three days and leave on for 1 day before washing off and the other drug in mass treatment was Ivermectine oral 200 micrograms/kg once to be repeated after two weeks. All the skin below the neck should be treated, including the genital, buttock, palm and soles and under the nails. On other hand for children under 2 years, pregnant and breast feeding women, 5 to 10 % sulfur topical application once per day for three days. The other interventions were taken awareness creation on all household contacts should be treated at the same time even if asymptomatic and Reapply the topical scabicide to the hands if they are washed during the treatment period (in 8 hours after application of the medication). Clothing, bedding, and linens used by an infested individual during the seven days prior to and during treatment should be washed or cleaned and dried sun or putting clothes in a plastic bag for two days it is, effective in letting the mite die. Routine cleaning of the house and health education on prevention is important to avoid reinfection.

**Table 48 :** scabies affected areas and population in Hotspot woreda East Gojjam Zone, Amhara Region, 2015.

| Hotspot woredas | Number of affected kebeles | Population affected by scabies |
|---|---|---|
| Shebel Berenta | 4 | 13,128 |
| Enarji Enawuga | 8 | 62,070 |
| Enbes Saremder | 20 | 82,108 |
| Total | 32 | 157,306 |

**Supporting screening**

We are supporting the screening procedure that undertaken house to house for not missing single children. MUAC screening in all kebeles were starting and we create system to get all screening child and pregnancy mother day to day.

**Table 49 :** Screening result in 3 hotspot woredas, East Gojjam Zone, Amhara Region, 2015

| Hotspot woredas | Screened | | No SAM cases | | No MAM cases | |
|---|---|---|---|---|---|---|
| | < 5 children | PLW | Age 6-59 months | Age > 5 years | Age 6-59 months | Age > 5 years |
| Enarji Enawuga | 22,216 | 5997 | 25 | 9 | 232 | 112 |
| Enbes Saremder | 14,265 | 2947 | 296 | 142 | 1006 | 902 |
| Shebel Berenta | 13,137 | 3097 | 47 | 84 | 303 | 93 |
| Total | 49,618 | 12,041 | 368 | 235 | 1541 | 1107 |

## Complied Body Works

**Major Challenges and Weakness**

- There are no established mechanisms for engaging with HDA and local community networks (Edir, Ekub…)
- Most of Kebeles have no water supply in Human and animal consumption even in health centers.
- There is no water treatment in Enbes Saremder and Shebel Berenta woredas.
- In Enbes Saremder and Shebel Berenta there are only one SC and in Enareje Enawga there is no SC at all.
- There no supplementary feeding program in all woreda
- There is no enough Trained manpower in SAM management
- In most Kebeles there is no assessable transportation.
- There is no profile map in all woreda
- Weekly malnutrition reporting format are not reached up to health center
- Gap identified in Human resources especially in health extension worker

**Major Action Taken by Team**

- We organized HDA for EHN preparedness and responses based on focused group discussion by HEW
- Revitalizing EHN task force, the members to be included like (Agriculture, School, Water etc...) and main duties and responsibilities of task forces.
- We discusses water problem with Woreda administrative officer and zonal officer.
- We gave orientation on EHN for woreda PHEM officers, Nutritional officers, District health officers and Districts administrator officers.
- Give training for SAM management for health center staff and HEW for 1-3 day
- We gave them health profile checklist to do health profile.
- we give the reporting format for all health center and start to report for woreda and higher level

**9.2 providing Support**

During our stay in the field base each of us had assignment zones to take care of .We followed the overall situation of the zone; we made communication with Zonal PHEM officers via phone and email .Additionally, Assist PHEM officers in Weekly PHEM report time.

## 9.2 Conference and Training

- **EPHA 26th annual conference:** this was held in Bahir Dar in February 26 -28, 2015. I got experience of public health interventions and polices from the officials and expertise participated there. Particularly the issue of car accidents was given more emphasis at that conference
- **Provision of training for health professionals and supportive supervision primarily on public health emergency management**

To strengthen the surveillance activities the Amhara National Regional Health Bureau Public Health Emergency Management (ANRHB/PHEM) core process planned to conduct training .This training was given to make familiar and motive lower level health professionals on public health Emergency management program. Power point presentations, discussions were used as training methods. Following each presentation heated discussions were held. Soft copies of the training materials were given for the trainees. The training addressed Introduction to public health emergency management system, surveillance and early warning, public health emergency preparedness ,response and recovery outbreak investigation ,surveillance of rabies measles ,malaria ,meningitis ,malaria, NNT ,influenza.

1. Training for health workers Woreta, Amhara region on public health surveillance for four days (34 Females and 45Males trainees form health center and woreda officers)
2. Training for public health emergency officers at Burie, West Gojjam zone, Amhara region for Five days (10 females and 43 males from Zonal an woredas PHEM officers)
3. Training for public health emergency officers at Dangila, Awi zone, Amhara region for 3 days (5 females and 40 males from Zonal a woredas PHEM officers)
4. Supportive supervision was done in East Gojjam, West Gojjam and North Shewa integrated with different partners (MSH, I-TECH , UN and WHO) mainly on priority diseases

**Training Cost:** To facilitate the training all training costs were covered by UNICEF and WHO. All trainees came to the training site by public transport. The transport expenses were reimbursed for all trainees‟ based on their receipt. Per Diem was also covered by UNICEF.

## 9.3 Bulletin Article

AMHARA NATIONAL REGIONAL STATE HEALTH BUREAU

PUBLIC HEALTH EMERGENCY MANAGEMENT (PHEM) CORE PROCESS

# WEEKLY PHEM BULLETIN

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Vol II-20| Week 20 May 09– May 15, 2016|

**Major issues in the bulletin:**

- Weekly surveillance report completeness and timeliness
- Weekly malaria trend in the region
- Regional PHE situation
- Other issues

**I. Introduction:** This bulletin represents the reporting period of week 20 and serves to provide information on public health emergencies and surveillance activities for evidence based decision making. It also gives a chance for partners working on public health to engage in priority issues of the region. The bulletin shows surveillance report completeness and timeliness, Malaria situation and other PHEM targeted disease in the region.

**II. Weekly Surveillance report:**

The overall completeness of the reporting units in week 20 was **97.5%**. Completeness is above 90% in all zones. The completeness in Private health facilities was **84%**.

Figure 1: Completeness by zone in week 20, 2016, Amhara region.

**III. Diseases and conditions**

**1. Malaria:** A total of **10947** malaria cases (**5%** of the total out patient cases) with positivity rate of **26%** were reported in week **20**. From the total positives, *Plasmodium falciparum Plus mixed and Plasmodium Vivax* constituted **61%** and **39%** respectively. The proportion of malaria cases from total cases **(10%)** and positivity rate **(35%)** were higher in North Gondar and South Gondar zones respectively, where as proportion of Pf cases from total positives **(82%)** is higher in Oromia zone. As it is shown in figure two, the total malaria cases in this week were Lower as compared with the same week of 2005, but higher than the same week of 2006 and 2007 EFY.

Figure 2: Regional malaria trend by week from 2005 to 2008 EFY.

## Malaria Case by District (Woreda)

Regionally malaria cases were decreased by **3668 (50%)** cases as compared with week 19. Malaria case increment was seen in all zones except Dessie town, North Wollo and Oromia zones. Malaria case increment by 30% and above as compared with the previous week was seen in South Gondar, West Gojjam, Awi, Gondar town, Bahirdar town, East Gojjam and North Gondar zones. From the total malaria cases reported in this week, **2380(21.7%)** are reported from North Gondar zone. When we see the malaria cases by woreda, 92(61%) of the woredas in the region had shown case increment (from one case to 810 cases) and 39(26%) of the woredas in the region had reported case decrement (from one case to 40 cases), where as the remaining 21(13%) woredas had reported the same number of cases with the previous week. Fogera, Jabitehinan, Denbia, Dera, Quarit, Farta, Jawi, Chilga, Andabiet, Gondar town, Metema, Finoteselam Town, Dembecha, Ebnat, Sekela, Huletejuenesie, Guagusashekudad, Takusa, Libokemkem, South Achefer, Enebsiesarmidr, Gozamn, North Achefer, Gonjikolella, Chagni, Mecha, Bahirdar Zuria, Dabat, Fagitalekoma, Kewot, Alefa, Artumafursi, Efrata, Gonchasisoenesie, Aneded, Ankesha, Awabel, Banja, Kemisie town, Zigem, Janamora, Dejen, Abrgelie, Yilmanadensa, Borena, Debre Markos town, Dangila Ketema, Enemay, Injibara, Kombolcha, Sekota Zuria, Jamma, Gubalafto, Motta, Weldia, Worebabu, Beyeda, Enarejenawga, Menzkeya, Shebelberenta and Wadilla, are woredas where malaria case increment by more than **30%** is seen as compared with the previous week. Ten top woredas by increment of cases in this week as compared with week 19 were presented in figure 3 below.

**Figure 3:** Ten top woredas with malaria case increment in week 20 as compared to week 19, Amhara Region.

### Comparison of 2007 and 2008 EFY (Week 18 -20/2016)

In this sub topic last year 3 weeks data were compared with the same period of this year. The 2008, week 20 malaria cases were higher than the same week of 2007 EFY in most of the zones except Awi, Dessie town, BahirDar town and West Gojjam zones.

**Table 1: 2007 & 2008 EFY malaria cases comparison by zone, Week 18-20**

| Zone | 2007 Malaria cases | | | 2008 Malaria Cases | | | Change from 2007 to 2008 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Week 17 | Week 18 | Week 19 | Week 17 | Week 18 | Week 19 | [illegible] | [illegible] | [illegible] |
| Awi | 1116 | 959 | 1174 | 348 | 418 | 684 | -768 | -571 | -490 |
| B/Dar town | 111 | 103 | 124 | 26 | 59 | 98 | -85 | -44 | -26 |
| Dessie town | 1 | 4 | 5 | 5 | 3 | 3 | 4 | -1 | -2 |
| East Gojjam | 272 | 347 | 341 | 306 | 388 | 592 | 34 | 41 | 251 |
| Gondar town | 58 | 62 | 56 | 53 | 44 | 117 | -5 | -18 | 61 |
| North Gondar | 1787 | 1897 | 1951 | 1621 | 1833 | 2380 | -166 | -64 | 429 |
| North Shewa | 76 | 72 | 72 | 211 | 180 | 220 | 135 | 108 | 148 |
| North Wollo | 113 | 98 | 111 | 101 | 128 | 121 | -12 | 30 | 10 |
| Oromia | 113 | 89 | 108 | 261 | 270 | 252 | 148 | 181 | 144 |
| South Gondar | 1232 | 1258 | 1731 | 1479 | 2214 | 3636 | 247 | 956 | 1905 |
| South Wollo | 128 | 155 | 121 | 106 | 132 | 138 | -22 | -23 | 17 |
| West Gojjam | 2036 | 2368 | 2647 | 1209 | 1545 | 2630 | -827 | -823 | -17 |
| Wag Himra | 79 | 59 | 56 | 61 | 65 | 76 | -18 | 6 | 20 |
| Region | 7122 | 7501 | 8497 | 5787 | 7279 | 10947 | -1335 | -222 | 2450 |

**NB:** The red colored Numbers in the table show case increment in 2008 as compared with the same week of 2007 E.C

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## 9.5 Supporting Ebola Screening in African union meeting, 2015

The first Ebola outbreaks in 1976 in Zaire (now Congo (Kinshasa) and The Sudan resulted in more than 400 deaths. Since then, outbreaks of Ebola among humans have appeared sporadically in Africa particularly in Sub Saharan Africa .Risk assessment in disease endemic areas is difficult because the natural reservoir host of Ebola viruses the manner in which transmission of the virus to humans occurs remain unknown. To date, approximately 9% of Ebola or Marburg Currently Ebola outbreak affected countries as of September 15, 2014 include: DRC, Guinea, Liberia, Sierra Leon, Senegal and Nigeria. The occurrence of Ebola outbreak is sporadic and unpredicted. Ethiopia is one of the countries which are identified to be at risk of EVD. Land ports in the four corners of the country are more likely to be at risk. The preparedness activities are being undertaken by Federal Minster of Health since EVD has been declared to be international Public Health Emergency by WHO. The Public Health Institute intended to reinforce the surveillance activities in the major land ports of the country apart from the airport. On January, 2015 there was African union meeting and 6 cohort Field Epidemiology residents were assigned to screening Ebola the guests ( African presidents and delegates) arriving at the airport, in hotels and which were at the meeting hall by EPHI. I was assigned in at the meeting hall for a month screening Ebola possibilities.

## Annex 8 : Resident CV

**CURRICULUM VITAE**

**General**

**Name:** Meklit Mekonnen

**Sex:** Female

**Nationality:** Ethiopian

**Date of birth:** May 9 -1990GC

**Marital Status:** Single

**Religion:-**Orthodox

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**Academic**

**Background**

**Higher education / University:**

- Alekan University college from 2000 -2003 B.S.C Degree in Nurse July 5/2011
- Addis Ababa University from November 2014-May- 2016 MPH in Field Epidemiology

**Language**

Amharic and English

**Work Experience**

- In 2012 ,working in Geregera health center in Gonji Kolela District, West Gojjam Zone for one years
- In 2013, working in Felege Hiwot referral Hospital, Bahir dar, Amhara Region for one and half years.

**Computer Skills**

- Microsoft Office
- Epi info
- SPSS
- ODK

**References**

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## Complied Body Works

**Declaration**

I, the undersigned, declare that this is my original work and has never been presented by another person in this or any other University and that all the source materials and references used for his thesis have been duly acknowledged.

Name: Meklit Mekonnen Getahun

Signature: _______________________________

Place: _______________________________

Date of Submission: _______________________________

The thesis has been submitted for examination with my approval as a university advisor.

Name of advisor: _______________________________

Signature: _______________________________

Date: ____________________________________