Addis Ababa University College of Health Sciences

School of Public Health

Ethiopian Field Epidemiology Training Program (EFETP)

Compiled Body of Works in Field Epidemiology

By

Sisay Awoke

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

June 2017

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Advisors

Mr. Sefonias Getachew

Mr. Yimer Seid

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Approval by Examining Board

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Examine

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List of Abbreviations

EFY----------Ethiopian Fiscal Year

AFI---------- Acute Febrile Illness

AIDS----------Acquired Immuno Deficiency Syndrome

ANC1----------First Ante Natal Care

ANC4----------Fourth Ante Natal Care

AWD- ----------Acute Watery Diarrhea

CFR---------- Case Fatality Rate

CL----------Cutaneous Leishmaniasis

CTC----------Cholera Treatment Center

EFLETP- ----------Ethiopian Field Epidemiology Programme

EPRP----------Emergency Preparedness And Response Plan

H1N1---------- Human Influenza

HEWS----------Health Extension Workers

HIV----------Human Immuno Deficiency Virus

HP---------- Health Post

HW----------Health Worker

ILI---------- Influenza Like Illness

ISS---------- Integrated Supportive Supervision

MAM ---------- Moderate Acute Malnutrition

MCV----------Measles Combined Vaccine

MDR----------Multi Drug Resistance

ML----------Muco-Cutaneous Leishmaniasis

MSF----------Medicine Sans Frontiers

MUAC----------Mid Upper Arm Circumference

OTP----------Outpatient Therapeutic Point Programme

PHEM----------Public Health Emergency Management

RDT----------Rapid Diagnostic Test

RRP----------Rapid Response Team

SAM---------- Sever Acute Malnutrition

SBA---------- Skilled Birth Attendant

SIA---------- Supplementary Immunization Activities

TB---------- Tuberculosis

TFP---------- Therapeutic Feeding Programme

URTI---------- Upper Respiratory Tract Infection

VL----------Visceral Leishmaniasis

WHO---------- World Health Organization

XDR----------Extensive Drug Resistance

Preface

This body of work incorporates nine chapters, of which eight of the chapters are mandatory for the accomplishment of the two years residency, but the last chapter is considered as additional content that has been done in our residency. These are; outbreak investigation, surveillance data analysis, surveillance system evaluation, health profile description report, manuscripts for peer reviewed journal, Abstracts submitted for scientific presentation, narrative summary of disaster situation visited, protocol/proposal for epidemiologic research project and other additional outputs are included in this body of work.

In the first chapter all outbreak investigations which we conducted are included. These are measles outbreak investigation and associated factors in Basso Liben district, Amhara region, 2017; Influenza like illness outbreak investigation and associated factors in Tehulederie district, Amhara region, 2016 and acute watery diarrhea in outbreak investigation in Andasa holly water, Amhara, 2016.

The second chapter in this body of work includes on visceral leishmaniasis data analysis in West Armachiho district, Amhara region from 2009-2015.

Third chapter includes surveillance system evaluation on malaria and dysentery in Awi zone and selected districts in this zone such as Fagta Lekoma district, Ankasha district and Dangla Zuria district Amhara region in 2016.

In chapter four health profile description reports are included. We conducted health profile decryption report of West Armachiho district which has been experienced in 2015.

Chapter five includes Manuscripts submitted for peer reviewed journals. In this we included Measles outbreak investigation and associated factors in Basso Liben district, Amhara region in 2017 and Visceral leishmaniasis data analysis in West Armachiho district, Amhara region from 2009- 2015.

In chapter six a total of three abstracts submitted and presented in scientific conferences are included. These are seven years of visceral leishmaniasis data analysis in West Armachiho district, 2016 and measles outbreak investigation and associated factors in Basso Liben district, Amhara region in 2017.

Chapter seven incorporates narrative summary of disaster situation visited. We conducted narrative summary disaster visited in South Gonder and North Gonder, Amhara region in 2016.

Chapter eight includes protocol/proposal for epidemiologic research project. We developed proposal for epidemiologic research on magnitude and associated factors for visceral leishmaniasis and HIV co-infection admitted at hospital in Amhara region 2015.

Chapter nine which is the last part of this body of work includes other additional outputs. In this chapter we included all activities which had been done on integrated supportive supervision during acute watery diarrhea in West Armachiho district and trainings given for health professionals in different location of zones and districts in Amhara region.

Chapter one- Outbreak investigation

1.1. Measles Outbreak Investigation in Basso Liben District, Amhara Region, Ethiopia 2017

Abstract

Introduction

Measles is an acute, highly contagious viral disease caused by measles virus and transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva. Globally during 2002–2009, 180,284 suspected measles cases were reported, of these, 97,204 (54%) were discarded because of a negative or indeterminate measles specific IgM test result; 10,071 (14%) had unknown classification; and 73,009 (41%) were confirmed as measles. Among 2,190 suspected measles cases reported in 61 separate outbreaks in Ethiopia (2015), of which 929 cases were confirmed positive. The aim of this study was to investigate the outbreak and identify associated factors for measles outbreak and to take possible intervention measures in Basso Liben district.

Methods and materials

We conducted 1: 2 unmatched case control studies. Face to face interview was conducted to gathered information from cases and controls by using structured questionnaire. Sample size was calculated using Stat calc function of Epi-info version 7 with confidence level of 95%, power of 80%, and assuming percent of controls exposed 18% and percent of cases with exposure 52% for un-vaccination. Total sample size included in the study was 30 cases and 60 controls. Before conducting interview informed verbal consent was obtained from all study participants to meet ethical standards. We entered data to Epi info version 7 and analyzed it by using SPSSversion20 software; finally the model was fitted by using multivariate logistic regression with 95% confidence level and p-value <0.05.

Results

In Basso Liben district the total attack rate of measles was 1.24 per 1000 population. The highest age specific attack rate was in under- one age groups (4.76 per 1000 children), and the next was in age groups 1-4 years old which was 3.28 per 1000 population. In multivariate logistic regression contact history with measles case AOR=8.132 (95% CI 2.047, 32.297) and presence of measles case in the neighbour AOR= 6.928 (95% CI 1.37, 29.12) were risk factors for contracting measles.

But previous history of measles case AOR= 0.10 (95% CI 0.02, 0.56) and vaccinated with measles vaccine AOR=0.11(95%CI 0.021, 0.573) were protective associated factors for measles.

Conclusion

In multivariate logistic analysis presences of measles case in the neighbour and contact with measles case were significant associated factors for contracting measles, but previous history of being measles case and vaccination were protective factors for measles. Basso Liben district health office and health centers should improve and strength routine measles vaccine immunization coverage and also under- 30 years age groups should be targeted for supplementary immunization programme for measles.

Key words; measles, outbreak, Basso Liben, case control, Ethiopia

Introduction

Measles is an acute, highly contagious viral disease caused by measles virus. This highly contagious virus is transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva. Common source outbreaks associated with airborne transmission of measles virus have been documented. The measles virus is a member of the genus Morbillivirus of the Paramyxoviridae family. The incubation period is approximately 10–12 days from exposure to the onset of fever and other nonspecific symptoms and 14 days (with a range of 7–18 days),from exposure to the onset of rash (1).

Measles is one of the most highly infectious diseases known. Measles can be particularly severe in susceptible infants, pregnant women, and immuno compromised individuals. The most effective way to control measles is by active immunization of a high proportion of the population. Vaccination against measles was introduced in 1968 but coverage was sub-optimal up to the late 1980s. The European region of the World Health Organization has adopted a target for the elimination of measles from the region by 2010 (2). Neither immunoglobulin nor vaccines are 100% effective in preventing measles (3).

Measles is one of the most contagious viral diseases known, and it has been preventable since 1963 through vaccination. Serologic and epidemiologic studies indicate that 1-dose measles vaccine efficacy is approximately 85%–90% when given at 9 months of age, and that 2-dose efficacy is 99% when the second dose is given at 12 months of age (4).

Routine measles vaccine coverage, plus supplementary immunization activities (SIAs) reaching 145 million children in 2012, led to a 77% decrease worldwide in reported measles annual incidence, from 146 to 33 per million population, and a 78% decline in estimated annual measles deaths, from 562,400 to 122,000. Compared with a scenario of no vaccination, an estimated 13.8 million deaths were prevented by measles vaccination during 2000–2012(5).

The number of measles deaths globally decreased by 71% between 2000 and 2011, from 542 000 to 158 000. Over the same period, new cases dropped 58% from 853 500 in 2000 to 355 000 in 2011 globally (6).

During 2002–2009, there were 180,284 suspected measles cases reported. Of these, 97,204 (54%) were discarded because of a negative or indeterminate measles specific IgM test result; 10,071

(14%) had unknown classification; and 73,009 (41%) were confirmed as measles. Among the 73,009 confirmed cases, 31,915 (44%) were classified as laboratory confirmed; 32,562 (45%) as epidemiologically linked; and 8532 (12%) as clinically compatible. During 2002–2009, males accounted for 52% of confirmed measles cases (7).

A retrospective matched case–control study was conducted in united kingdom(2012) showed in multivariate analysis found three factors to be independently associated with measles infection were incomplete/partial vaccination for age under age for routine vaccination and hospital admission(8).

Unmatched case-control study was conducted in Kechene Medhanialem Addis Ababa, Ethiopia-(2014) which showed that factors associated with illness were being unvaccinated (OR=7.1; 95% CI=1.6-31.2) and having contact with measles patient (OR=15; 95% CI=2.9-77.3)(9).

Among 2,190 suspected measles cases reported in 61 separate outbreaks in Ethiopia (2015), of which 929 cases were confirmed positive. The majority of the cases were from Nejo and Nole woredas of West Wellega zone (Oromia) and Kola Tembien woreda of Central Tigray zone (Tigray). Twenty eight per-cents of cases were children under five years and 33 % of those affected were above 15 years of age (10). This study helps us to investigate the outbreak and identify associated factors for measles outbreak and to take possible intervention measures.

Objectives

General objectives

To investigate the outbreak and identify associated factors for measles outbreak and to take possible intervention measures in Basso Liben district, 2017.

Specific objectives

To confirm the existence of measles outbreak in Basso Liben district, 2017

To describe measles outbreak in terms of place, person and time in Basso Liben district, 2017

To identify possible associated factors for measles outbreak in Basso Liben district, 2017

To take intervention measures for measles in Basso Liben district, 2017

Methods and materials

Study area and population

The study area was Basso Liben district found in 280 KM far from Bahir Dar the town of Amhara region and 315 Km from Addis Ababa, capital city of Ethiopia. The district had a total of 162,546 population of whom 5038 were under one year‘s old age in 2107 according to 2017 population

projection data. The district had 25 rural and urban kebeles, five health centers, 22 health posts and one primary district hospital.

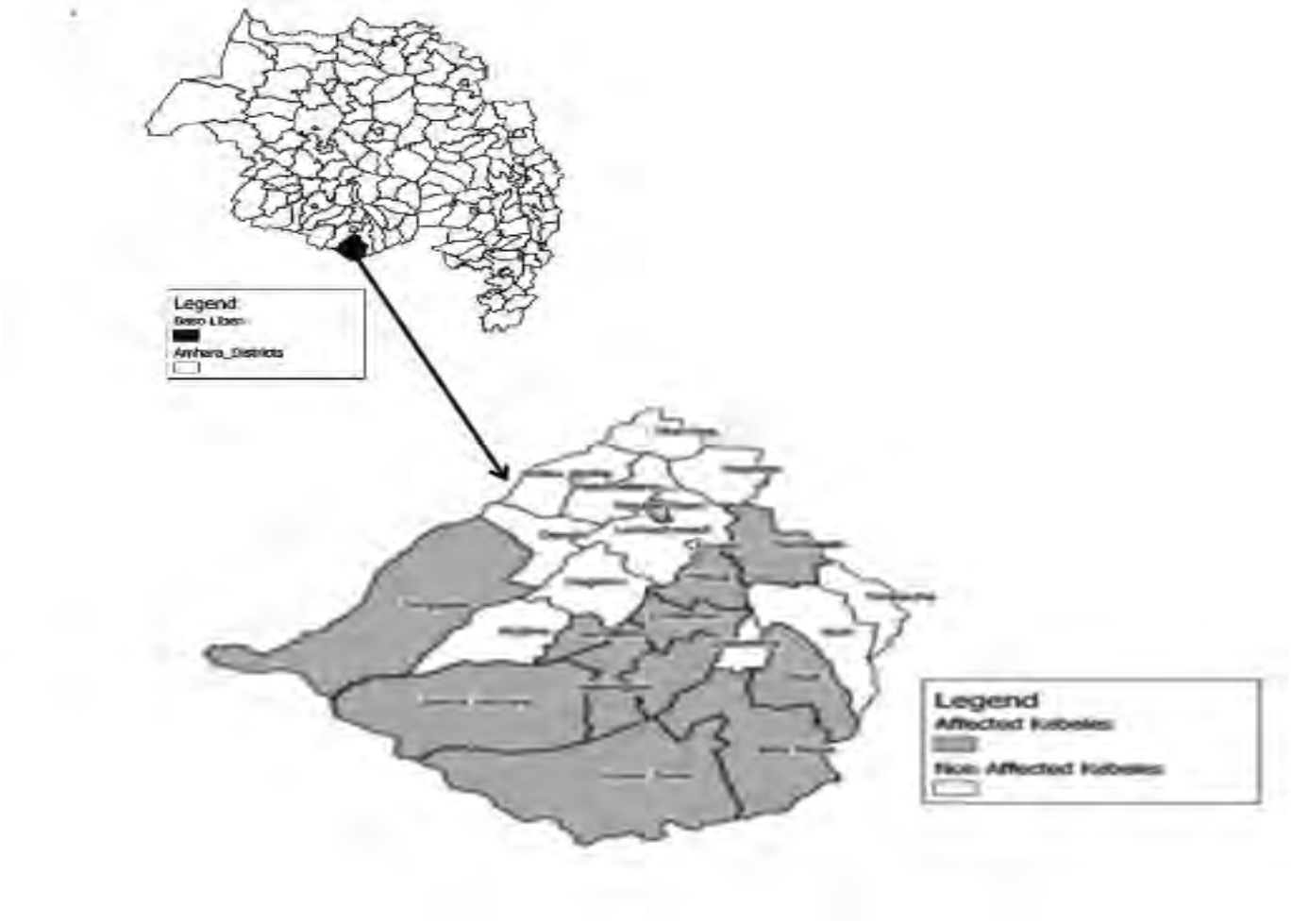

Figure 1: affected kebeles by measles outbreak in Basso Liben district, Amhara region, Ethiopia, 2017

Study design

Unmatched case control study was conducted.

Source population

The population of Basso Liben district in 2017 during the study period was our source population.

Study population

The population of Yelamgiej catchment during 2017 (Anjim, Yelamgiej and Zenbol) were our study population.

Sample size

Sample size was calculated using Stat calc function of Epi-info version7 software with confidence level of 95%, power of 80%, and assuming percent of controls exposed 18% and percent of cases with exposure 52% for un-vaccination. This gave us a minimum sample size of 26 cases and 52 controls (Fleiss). Total sample size included in the study was 30 cases and 60 controls beyond the minimum calculated sample size.

Variables in the study

Dependent variables

Respondents‘ measles status was dependent variable for this study.

Independent variables

Sex, age, residency, occupation, vaccination status , travel history, contact with measles cases, presences of measles case in the neighbour hood or in the house hold, mothers educational level, were some independent variable of the study..

Measles case definition.

Suspected measles case was defined as any person with fever, maculo-papular generalized rash and cough, coryza (runny nose) or conjunctivitis.

A confirmed case was defined as suspected case with laboratory confirmation (positive IgM antibody).

Sampling technique

Study areas were selected purposively due to active measles case report. All active measles cases during the study period were included.

Data collection

We used semi-structured questionnaires and interviewed cases and controls to collect information such as demographic, travel history, vaccination status, educational level of mothers and fathers, clinical symptom, possible associated factors and other related variables for measles.

Ethical Consideration

Letter of support was written by Amhara regional health bureau to Basso Liben district and Debre Markos zonal health department allowing us to collect data. Confidentiality of information obtained from the patients' registration book must be also maintained. Before conducting interview informed verbal consent was obtained from all study participants. Privacy and confidentiality was ensured. The name of respondents was not written on the questionnaire; therefore, the information study participants provide was not known to others. The participation of individuals in this study was purely voluntary.

Data quality control

The data collection process was monitored and coordinated repeatedly by the principal investigator. Orientation was given for health personnel before actual data collection focusing on data collection procedures and clarity of questionnaires.

Data processing and analysis

After we checked the data for its completeness and cleanness, we entered data to Epi info version 7 and analyzed it by using SPSSversion20 software. Finally, the result was presented with tables, graphs and figures. Descriptive statistics like rate, ratio and proportion were also calculated to measure measles burden. Each independent variable was analyzed with the outcome variable by using simple logistic regression. Those independent variables with P-value < 0.2 in univariate analysis were fitted to multiple logistic regression models to identify level of significance with response variable. Goodness of fit test was evaluated by using Hosmer and Lemishow with P- value > 0.05 considered statistically significant. Finally independent variables with p-value < 0.05 in multiple logistic regressions were considered statistically significant and the model was fitted.

Inclusion criteria

Cases

Any resident of Yelamgiej catchment who tested positive for IgM or who fulfilled standard case definition of measles during the study and who agreed to participate were included.

Controls

Controls were residents of Yelamgiej catchment during the study that did not develop signs and symptoms of measles; and willing to participate were included in the study.

Exclusion criteria

Cases

Those measles cases who did not agreed to participate, not fulfilled measles case definition and unconscious measles case were excluded in the study.

Controls

Those who were not agreeing for the study were excluded.

Results

Descriptive analysis

In Basso Liben district 201 people were affected by measles outbreak in the period between 3 January and March 17/2017. Among the total measles cases 51% were females. The median age of cases were nine (9) years old with a range of 2 months to 50 years. Attack rate of measles in females and males was similar, which was 0.08 per 1000 population.

Magnitude of Measles outbreak by place

From the total number of measles cases reported in the district 30.3%, 19% and 10.4% were reported from Yelamgiej, Komie and Anjim kebeles respectively. Out of 201 total measles cases reported from 15 kebeles, 121(60%) cases were reported by Yelamgiej, Komie and Anjim kebeles. Yelamgiej, Komie and Anjim kebeles had overall attack rate of 10.5, 4 and 3.5 per 1000 risk population respectively.

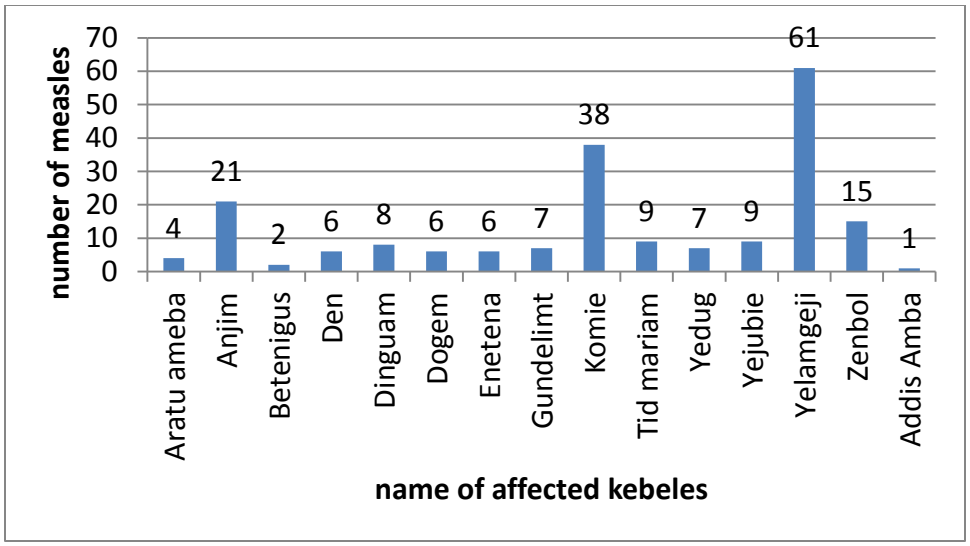

Figure 2: number of measles cases by affected kebeles in Basso Liben District, Amhara region, Ethiopia, 2017

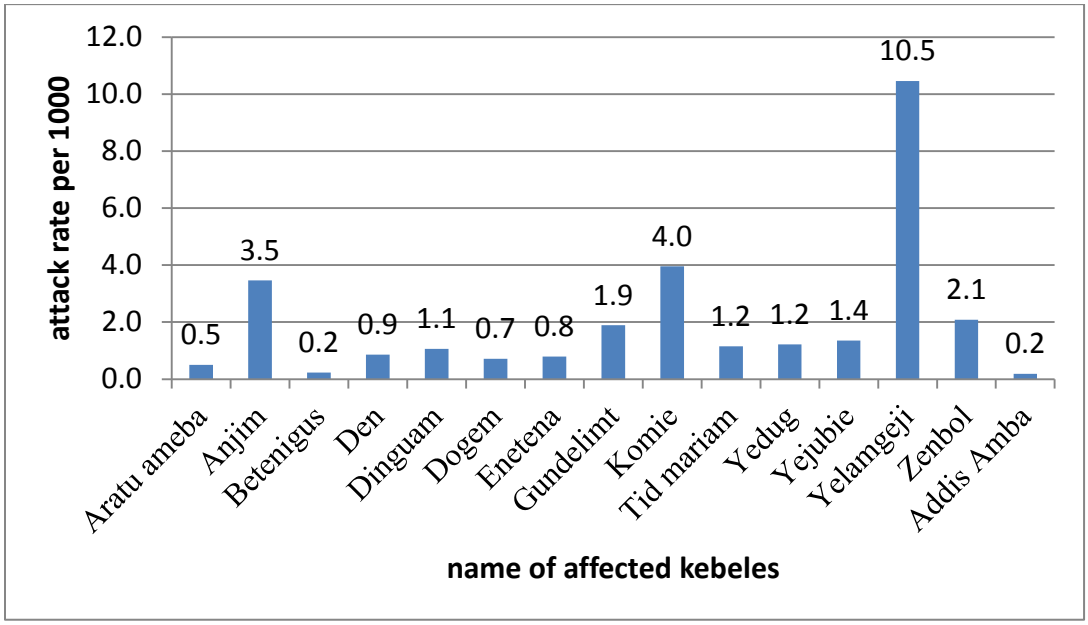

Figure3: Attack rate of measles by kebeles in Basso Liben district, Amhara region, Ethiopia, 2017

Frequency of cases by reported health centers

From the total measles cases reported (201) in the district, 119 (59.2%) cases were reported by Yelamgiej health center and 40 cases (20%) were from Betenigus health center during the outbreak as shown in the table below.

Table 1: Frequency of measles cases by reporting health center in Basso Liben district, East Gojam, Amhara region, Ethiopia, 2017

Name of health facilities	Frequency of measles cases	Measles Percentage	Cumulative Percent of measles
Betenigus HC	40	19.9%	19.9%
Den HC	18	9.0%	28.9%
Yejube HC	8	4.0%	32.8%
Yejube P/Hosp.	16	8.0%	40.8%
Yelamgiej HC	119	59.2%	100.0%
Total	201	100.0%	

Frequency of measles case by age category and reported health centers

From the total cases affected by measles outbreak in Basso Liben district 61% were under 15 years old, of whom 35.4% were under five years old. Out of the total measles cases in under five years age (35.4%) reported by Basso Liben district, 20% cases were reported from Yelamgiej health center during the outbreak.

Table 2: Frequency of measles cases by age category and reported by Health centers in Basso district, East Gojam, Amhara region, Ethiopia, 2017

Name of health center(HC)		Age category of measles case in years						Total
		≤1	1-5	5-10	10-15	15-30	≥30	
Betenigus HC	Count	5	13	11	9	2	0	40
	% of Total	2.5%	6.5%	5.5%	4.5%	1.0%	0.0%	19.9%
Den HC	Count	4	0	4	3	7	0	18
	% of Total	2.0%	0.0%	2.0%	1.5%	3.5%	0.0%	9.0%
Yejube HC	Count	1	0	2	1	4	0	8
	% of Total	0.5%	0.0%	1.0%	0.5%	2.0%	0.0%	4.0%
Yejube P/Hosp.	Count	4	4	1	0	7	0	16
	% of Total	2.0%	2.0%	0.5%	0.0%	3.5%	0.0%	8.0%
Yelamgiej HC	Count	10	30	12	9	56	2	119
	% of Total	5.0%	14.9%	6.0%	4.5%	27.9%	1.0%	59.2%
Total	Count	24	47	30	22	76	2	201
	% of Total	11.9%	23.4%	14.9%	10.9%	37.8%	1.0%	100.0%

Age specific attack rate

In the district the total attack rate by measles outbreak was 1.24 per 1000 population. The highest age specific attack rate was in ≤1year‘s old age group (4.76 per 1000children) and the next was in 1-4 years old age group which was 3.28 per 1000 population. Age groups > 30 years old age were the least affected group by measles outbreak in the district with an attack rate of 0.04 per 1000 populations in the age group.

Table 3: Age specific attack rate of measles outbreak in Basso Liben district, Amhara region, Ethiopia, 2017

Age category	Population at risk	Number of population affected by measles	Percentage	Attack rate per 1000 population in the age group
≤ 1 years	5,038	24	12%	4.76
1-4 years	14,330	47	23%	3.28
5-9 years	23,636	30	15%	1.27
10-14 years	24,246	22	11%	0.91
15-30 years	48,758	76	38%	1.56
>30years	46,538	2	1%	0.04
Total	162,546	201	100%	1.24

Measles vaccination status by age category

Among all populations affected by measles, 20%, 36.8% and 14.9 % were unvaccinated, received one dose and two doses respectively, but 28.4% were unknown history of measles vaccination status. Out of measles cases that were not given measles dose, 10.5% were under five year‘s old age groups. Out of the total measles cases with unknown history of measles vaccine dose (28.4%), 24.4% was in the age category of 15-30 age groups.

Table 4: frequency and percentage of measles dose received by age category among measles cases in Basso district, East Gojam, Amhara region, Ethiopia, 2017

Number of measles dose		Age category of measles case in years						Total
		≤1	1-5	5-10	10-15	15-30	≥30	
.00	Count	14	7	7	5	7	0	40
	% of Total	7.0%	3.5%	3.5%	2.5%	3.5%	0.0%	19.9%
1.00	Count	9	28	13	9	15	0	74
	% of Total	4.5%	13.9%	6.5%	4.5%	7.5%	0.0%	36.8%
2.00	Count	1	12	9	3	5	0	30
	% of Total	0.5%	6.0%	4.5%	1.5%	2.5%	0.0%	14.9%
unknown	Count	0	0	1	5	49	2	57
	% of Total	0.0%	0.0%	0.5%	2.5%	24.4%	1.0%	28.4%
Total	Count	24	47	30	22	76	2	201
	% of Total	11.9%	23.4%	14.9%	10.9%	37.8%	1.0%	100.0%

Frequency of measles vaccine dose given by health centers

Among the total measles cases in under-one age group who were not given measles vaccine dose (20%), 14% was reported from Betenigus (8%) and Yelamgiej health centers (6%). Also among all measles cases in Basso Liben district 15% were received two measles vaccine dose, of that 11.4% were reported from Yelamgiej health center.

Table 5: Frequency and percentage of measles vaccine dose by health centers among measles cases in Basso district, East Gojam zone, Amhara region, Ethiopia, 2017

Name of health center		Measles vaccine dose				Total
		.00	1.00	2.00	unknown	
Betenigus HC	Count	16	19	5	0	40
	% of Total	8.0%	9.5%	2.5%	0.0%	19.9%
Den HC	Count	8	6	1	3	18
	% of Total	4.0%	3.0%	0.5%	1.5%	9.0%
Yejube HC	Count	1	5	0	2	8
	% of Total	0.5%	2.5%	0.0%	1.0%	4.0%
Yejube P/Hosp.	Count	3	9	1	3	16
	% of Total	1.5%	4.5%	0.5%	1.5%	8.0%
Yelamgiej HC	Count	12	35	23	49	119
	% of Total	6.0%	17.4%	11.4%	24.4%	59.2%
Total	Count	40	74	30	57	201
	% of Total	19.9%	36.8%	14.9%	28.4%	100.0%

Date of onset of measles

An index female case who was 28 years old came to Yelamgiej health center on February 2/2016 presented with fever, cough and rash but unknown history of measles vaccination status and she had no history of travel but attended a wedding party. A total of six (6) suspected measles cases based were sent to Amhara regional public health institute for laboratory confirmation, of which four (4/6) were positive for IGM. Starting from January 3/2017 to the beginning of March the number of measles cases reported by Basso Liben district increased in irregular manner. During measles epidemic in the district the highest number of cases were reported on February 18/2017 and the next was reported on February 16/2017. On February 16/2017 supplementary measles vaccination was given which targeted on 6 months to15 year‘s age groups. But the outbreak continued increasing and decreasing in irregularly for more than four weeks.

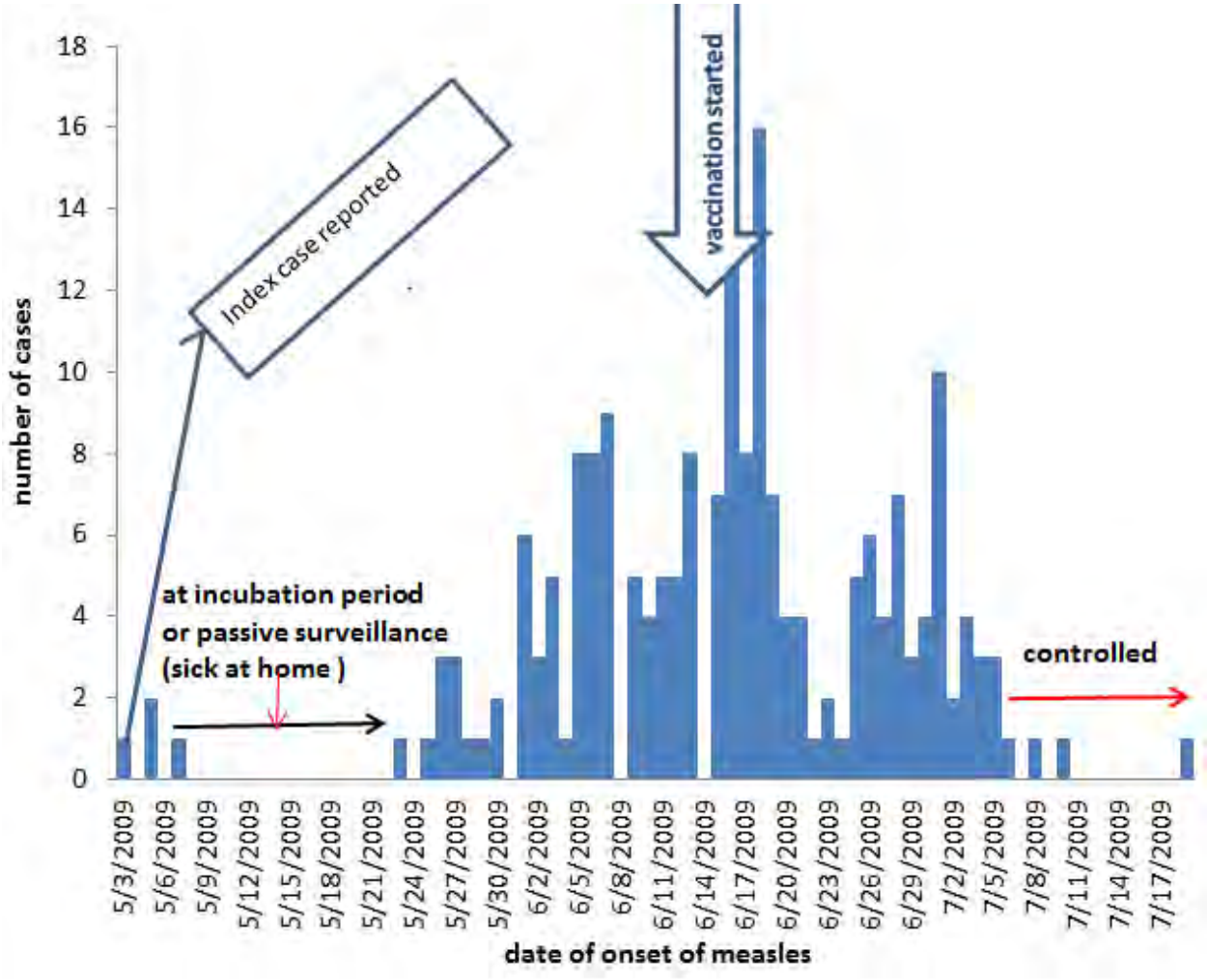

Figure 4: Measles cases by date of onset in Basso Liben district, Amhara region, Ethiopia, 20017

Clinical manifestation

Among the total measles cases 100%(30/30), 93%(28/30), 97%(29/30) and 86%(26/30) developed fever, cough, rash and conjunctivitis respectively. And also 67%, 13%, 53% and 20% cases developed pneumonia, blurred vision, mouth ulcer, and ear infection of measles complication respectively.

Figure 5: Symptom of rash seen on measles cases during measles outbreak in Basso Liben district, Ethiopia 2016

Figure 6: Health education given to the community during measles outbreak at a social event "Senbetie" by health extension worker and the investigator.

Simple logistic regression analysis

In bivariate logistic regression being unvaccinated OR 3.755 (95%CI 1.4, 10.07), no previous history of measles OR 6.91 (95%CI 2.45, 19.50), being contact with measles case OR 10.39 (95%CI 3.75, 28.78), being age below 15 years OR 2.75 (95%CI 1.1, 6.88), presence of measles cases in the neighbour hood OR 6.38 (95%CI 2.19, 18.53) were significant factors associated with measles as shown in table 6 below.

Table 6: Bivariate logistic analysis of independent variables for measles in Basso Liben district, Amhara region, Ethiopia 2016

Variables		Controls (%) (%)	cases	COR	P-value	95% CI for OR	
vaccination	no	32(53%)	7(23.3%)	3.755	0.009	1.4	10.07
	yes	28(47%)	23(76.7%)				
Previous history of measles	no	22(36.7)	24(80%)	7	0.000	2.45	19.5
	yes	38(63.3%)	6(20%)				
Exposure with measles case	no	49(81.7%)	9(30%)				
	yes	11(18.3%)	21(70%)	10.4	0.03	3.75	28.78
sex	male	38(63.3%)	16(53.3%)	1.51	0.36	0.27	1.6
	female	22(36.3%)	14(26.7%)				
Presence of cases in neighbour	yes	51(85%)	16(53.3%)	6.38	0.001	2.19	18.53
	No	7(11.7%)	14(26.7%)				
Age category	≤15 years	16(26.7%)	15(50)	2.75	0.03	1.1	6.88
	>15 years	44(73.3%)	15(50)				
Age				0.908	0.000	0.863	0.96

Multivariate logistic regression Analysis

In multivariate logistic analysis independent factors which remained significantly associated for contracting measles in Basso Liben district during an outbreak were, contact history with measles case AOR=8.132 (95% CI 2.047, 32.297) and presence of measles case in the neighbour AOR= 6.928 (95% CI 1.37, 29.12). But previous history of measles case AOR= 0.10 (95% CI 0.02, 0.56) and vaccinated with measles vaccine AOR=0.11(95%CI 0.021, 0.573) were protective associated factors for measles during the outbreak, as shown in the table below.

Table 7: Multivariate logistic analysis of risk factors for measles in Basso Liben district, East Gojam zone, Amhara region, Ethiopia, 2017

Variables	Controls (%) cases (%)			AOR	P-value	95% CI for AOR	
vaccination	no	32(53%)	7(23.3%)	Ref.	Ref.	Ref.	Ref.
	yes	28(47%)	23(76.7%)	0.11	0.009	0.021	0.573
Previous history of measles	no	22(36.7)	24(80%)	Ref.	Ref.	Ref.	Ref.
	yes	38(63.3%)	6(20%)	0.10	0.005	0.02	0.573
Exposure with measles case	no	49(81.7%)	9(30%)	Ref.	Ref.	Ref.	Ref.
	yes	11(18.3%)	21(70%)	8.13	0.003	2.047	32.97
Presence of cases in neighbour	yes	51(85%)	16(53.3%)	6.93	0.012	1.37	29.12
	No	7(11.7%)	14(26.7%)	Ref.	Ref.	Ref.	Ref.
Age				0.914	0.031	0.843	0.99

Intervention during the investigation

During outbreak investigation in Basso Liben district health education was given to the people at different social events and house to house about the occurrence of measles outbreak, early diagnosis and treatment as well as prevention and transmission of measles. We conducted also active case search at –Senbetie" and house to house visit.

Discussion

During measles outbreak investigation in Basso Liben district males were accounted for 49 % of cases, which was lower than the regional measles case-based surveillance data collected in 40 African countries during 2002–2009 which showed that males accounted for 52% of confirmed measles cases (6).

In this study the overall attack rate of measles outbreak was 1.24 per 1000 population, which was lower than overall attack rate of measles outbreak investigation conducted in the Kebridahar town of Somali Region(11) and Investigation of measles outbreak, Kendo Didaya woreda- SNNPR, 2013, Ethiopia(12) in 2013 which were 7.9 per 1000 population and 5 per 1000 population. Also over all attack rate of measles outbreak in this investigation was lower than overall AR of a case control outbreaks investigation of measles in district Kangra, North India which was 42 per 1000 population (13). This difference might be results from higher immunity in Basso Liben district residence populations or improved vaccination coverage. Among all cases affected by measles outbreak in Basso Liben district, 20% was unvaccinated, lower than a study conducted in Zaka district, Zimbabwe, 2010 which was 29% unvaccinated. The most common symptoms in Basso district among cases were fever 100 %(30/30), rash 97 %(29/30) and conjunctivitis 86 %(26/30) all most nearer to a study in Zaka district, Masvingo Province, Zimbabwe, 2010 which showed that maculo-papular rash 103(93.6%), red eyes 97(88%) and fever 110 (100%) during the outbreak(14). Among all measles cases in Basso Liben district during the outbreak 12% of the affected age group was below one year‘s old age, lower than a study conducted in Shelby County, Tennessee, April–May 2016 which was 43 %(15). This difference might be due to smaller sample size (6 cases) in that study than ours study. Under 15 years old age measles cases in Basso Liben district were accounted for 61%, lower than a retrospective study conducted in Sudan in which 92% were below 15 years old out of 1,144 measles patients. I suggested that this difference might be due to recent increment in measles vaccine coverage in lower age groups. Among all measles cases in Basso district, 20% were unvaccinated lower than measles outbreak investigation conducted in Sudan (2004) which found 48.6% were unvaccinated (16). This discrepancy might be the result of better access to health care and higher vaccine coverage in Basso Liben district. In this study forty cases (20%) were unvaccinated, 36.8% were given single dose and 40 (15%) were given two measles dose different from investigation of a measles outbreak in Cordillera, northern Philippines, 2013 which was 20% unvaccinated, 72% had given single measles dose and the rest was unknown

history of measles vaccination (17). This discrepancy might be the result of differences in accessible health service and national programme of immunization in countries.

In Basso Liben district people with presence of measles case in the neighbour was seven times more likely contracting measles than those who had no measles case in the neighbour. An also those who had contact with measles case were eight times more likely to contract measles than who had no contact with measles case. Similarly an outbreak investigation conducted in Kebridahar town of Somali Region, Ethiopia in 2013 showed that Contact with affected person in neighbor were five times more likely to develop measles than those who had no contact [AOR 5.09(1.44:17.92)] (11). In this study also those who were not vaccinated for measles vaccine were more likely contracting measles than vaccinated. Similarly a case–control measles outbreak investigation conducted in Tanzania, 2006–2007 showed those who were unvaccinated for measles were 5.7 times more likely to develop measles than vaccinated (18).

Risk of measles was reduced by 90% if persons had infected by measles in the past as compared with those without history of measles. Risk of measles was reduced by 89% due to vaccination as compared with unvaccinated. This suggested that people had history of being measles case and vaccinated were developed immunity for protecting measles.

Conclusion

Among the total measles cases that were unvaccinated for measles vaccine, under ten years children were accounted the highest percentage (15%). Of the total measles cases in Basso Liben district under- 15 years age groups were the highest affected and the second affected groups were in 15-30 age group. In multivariate logistic analysis presences of measles case in the neighbour and contact with measles case were significant associated factors for contracting measles, but previous history of being measles case and vaccination were protective factors for measles.

Limitation of the study

Because a study was used retrospective interview method recall bias might have been an issue. Attempts were made to minimize recall bias by shortening the time between presentation of illness and data collection as much as possible not more than two weeks.

Even though the study sample size met the minimum defined by the sample size calculation, it remained relatively small, which explaining wide CI in the analysis.

Recommendation

East Gojam Zonal health department, Basso Liben district health office, Yejube health center and Yelamgiej health center should improve and strengthen routine measles vaccination. Basso Liben district health office‘s Supplementary immunization programme for measles should be targeted below 30 years age groups.

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1.2. Influenza like Illness Outbreak Investigation and Associated factors in Tehulederie District, Amhara Region, Ethiopia 2016

Abstract

Back Ground

Influenza is a viral infection that affects mainly the nose, throat, bronchi and, occasionally, lungs. Globally seasonal human influenza annual outbreaks result in 3–5 million severe cases and between 250,000 and 500,000 deaths. Most infected people recover within one to two weeks without requiring medical treatment. However, in the very young, the elderly, and those with other serious medical conditions, infection can lead to severe complications. The main aim of this study was to investigate the Influenza like illness outbreak and associated factors at Tehulederie district.

Methods

We conducted unmatched case control study design and all 25 suspected influenza cases; and 50 controls were included in the study. The data was entered to Epi Info version 7 and analyzed by SPSS version 20 by using multivariate logistic regression to determined statistical significance of factors with p-value <0.05.

Result

Attack rate of influenza outbreak was 0.09, 0.28 and 0.2 in the age category of <5, 5-14, and ≤15 age groups respectively. Among females the attack rate was 0.32 per 1000 whereas in males it was 0.15 per 1000. Having sick person in the family, travel history to influenza affected area and age were significant associated factors for influenza like illness with AOR=5.8, 95%CI (1.37, 24.78), AOR=7.5, 95% CI (1.41, 39.68) and AOR= 0.92, 95%CI (0.86, 0.97) respectively.

Conclusion

Sick person in the family and travel history to influenza affected area were significantly associated factors for influenza. District health office and health center should strengthened health education and awareness about influenza like illness and use open transportation system to the community. Sick persons in the family should cover their mouth when they sneezing and coughing.

Key word: Influenza like illness, Outbreak, Risk factors Tehulederie, Ethiopia

Introduction

Influenza is a viral infection that affects mainly the nose, throat, bronchi and, occasionally, lungs. Infection usually lasts for about a week, and is characterized by sudden onset of high fever, aching muscles, headache and severe malaise, non-productive cough, sore throat and rhinitis (1, 2).
The virus is transmitted easily from person to person via droplets and small particles produced when infected people cough or sneeze. Influenza tends to spread rapidly in seasonal epidemics. Most infected people recover within one to two weeks without requiring medical treatment. However, in the very young, the elderly, and those with other serious medical conditions, infection can lead to severe complications of the underlying condition, pneumonia and death (3).

Influenza is a highly infectious viral disease which can occur as a pandemic, epidemic, outbreak and in form of sporadic cases. A majority of human infections are caused by either type A or B influenza viruses. Type A has been associated with widespread epidemics and pandemics, while type B has been infrequently implicated in regional epidemics. Influenza type C infections cause only a mild respiratory illness.

Yearly influenza epidemics can affect all populations, but children younger than the age of two, adults older than 65, as well as the people with chronic medical conditions or weakened immune systems bear the highest risk of complications. Annual attack rate is estimated at 5–10% in adults and 20–30% in children (1).

In 2002 an influenza outbreak in Madagascar had a case fatality rate of 3% as compared to <0.1% in other influenza pandemics. The majority of deaths occurred in young children. Similarly high (3.5%) case fatality rates among children <5 years of age were observed during an influenza outbreak in the Democratic Republic of the Congo in 2002. More recently, the highly pathogenic avian influenza virus H5N1 has also been circulating in poultry in Africa and has caused a significant number of human infections, especially in Egypt.

A number of African countries have provided regular updates to WHO on the spread of influenza A (H1N1) 2009. However, the impact of the pandemic on the African continent is not apparent, which indicates a need to strengthen surveillance systems to assess the effect of the pandemic and monitor the impact of influenza in general (4).

To identify other groups of workers that might be at increased risk for pandemic influenza infection, influenza-like illness (ILI) and vaccination coverage data from the 2009 National H1N1 Flu Survey (NHFS), which was conducted during October 2009 through June 2010 in United States, were analyzed. In a representative sample of 28,710 employed adults, 5.5% reported ILI symptoms in the month before the interview, and 23.7% received the 2009 pandemic H1N1 (pH1N1) influenza vaccine (5).

Objectives

General objective

To investigate the outbreak and determine factors that associated with influenza like illness outbreak and to take possible intervention measures in Tehulederie district in 2016.

Specific objective

To confirm the existence of influenza like illness outbreak in Tehulederie district, 2016

To describe the outbreak in terms of place, person and time variables in Tehulederie district, 2016To identify risk factors for influenza like illness transmission in Tehulederie district, 2016

To guide control and prevention measures for influenza in Tehulederie district, 2016

Materials and Methods

Study area and population

Tehulederie district which is found in South Wollo zone Amhara region 450 Km away from Bahir Dar. The district had a total population of 108,993, of which 50,404 were females 46.2%.

Among the total population in the district 39,116 were under 15 age groups.

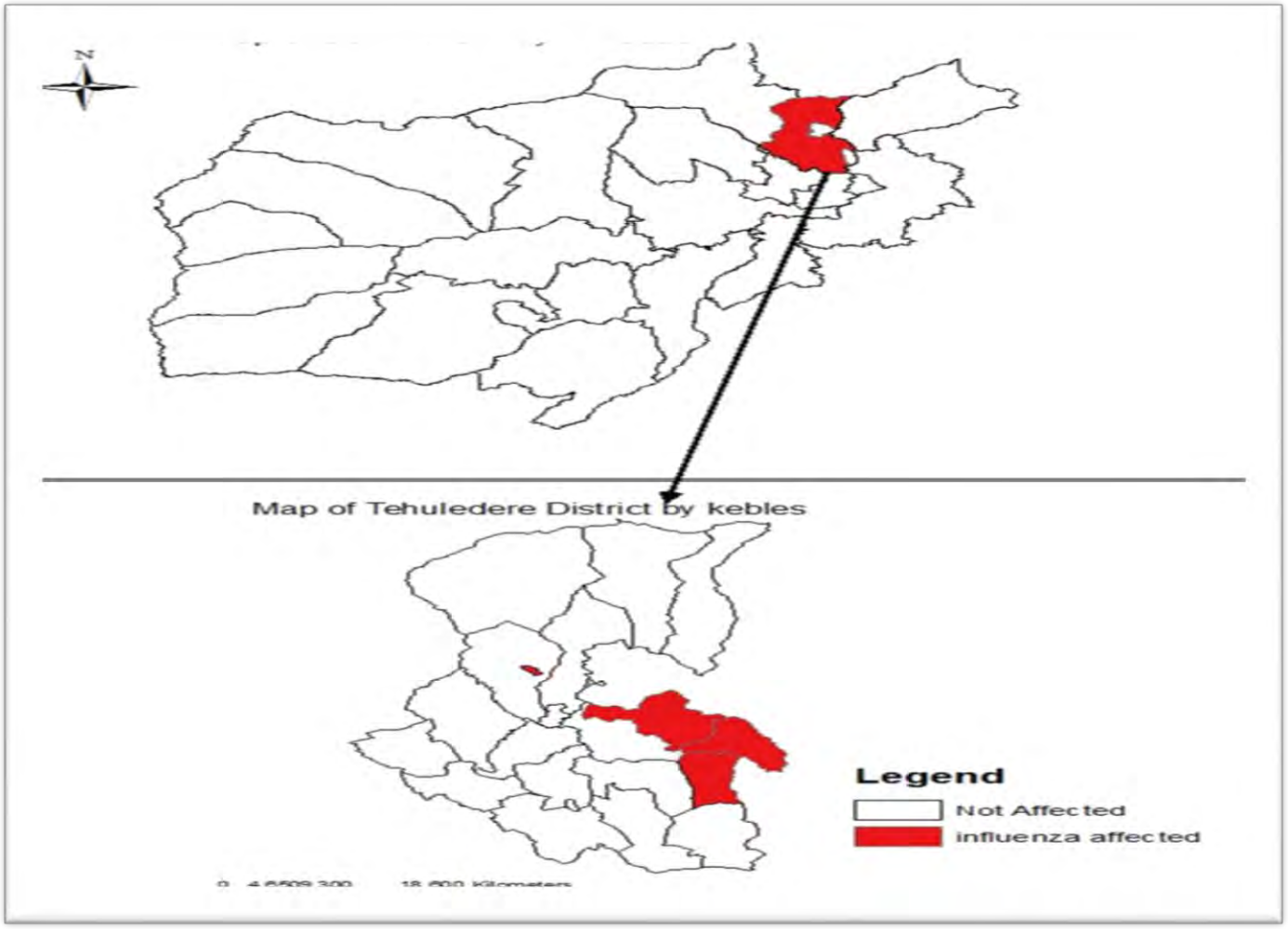

Figure 7: Influenza affected kebeles in Tehulederie district, Amhara Region, Ethiopia 2016

Source population

The population of Tehulederie district in the year 2016 was our source population.

Study population

Population found in Hardibo, Hara, Gobeya and pasomilli kebele population were our study population in the study period from 1-24/3/2016.

Study design

We conducted unmatched case control study design in the ration of 1:2 to determine possible risk factors of influenza. We used semi-structured questionnaires and interviewed cases and controls, and collected data such as demographic, knowledge and attitude, clinical pictures, possible associated factors and other related variables for the illness.

Case definition

Suspected case definition

A person with acute febrile respiratory illness: fever, cough, sore throat, shortness of breath, difficulty in breathing or chest pains) with onset within 7 days of close contact with a person who is a confirmed case of the new influenza A (H1N1) virus infection.

Confirmed case definition

A person meeting the criteria for a suspected case and positive results in a national and regional Influenza laboratory

Sampling technique and procedure

All influenza like illness cases was included in the study and controls were selected by facility based simple random sampling method.

Data collection

We used semi-structured questionnaires and interviewed cases and controls, and collected data such as demographic, knowledge and attitude, clinical pictures, possible associated factors and other related variables for the illness.

Data Quality assurance

Three people (including the investigator) collected the data. Two hour orientation on the questionnaire was given to the data collectors and the collected data was checked daily during the investigation period. Data was cleaned and checked for inconsistencies and missing values. This cleaning was done by running frequency of variables using Epi Info version 7, by the principal investigator before the actual analysis.

Data Analysis

All the collected was checked and entered on a computer using Epi Info version 7 and analyzed by SPSS version20.

Bivariate statistical logistic analysis and multivariate logistic regression analysis were conducted using SPSS version20 software to study association of illness with risk factors and exposure outcome were measured and tested using OR, 95% Confidence Interval and P-value 0.05.

Ethical issue

Informed consent was taken from all respondents before interviews and all agreed to take part in the investigation were included in the study.

Results

Descriptive analysis

Magnitude and attack rate of influenza like illness outbreak

There were 25 cases with no death between Marchs 1 -17/2016. The mean ages of cases were 24 years old with a range of 4.5-68 years. Most affected cases were female, 16(64%) and the remaining 36% were male. Attack rate of influenza outbreak in female and male was 0.32 and 0.15 per 1000 population respectively in Tehulederie district. Total kebele attack rate of influenza like illness was 3, 2.24 and 0.72 per risk population in Hara, Hardibo and Passo Mili kebeles respectively.

Table 8: Influenza like illness attack rate by kebeles in Tehulederie district, South Wollo zone, Amhara region, 2016

Name of kebeles	Total population at risk	Number of cases	Attack rate per 1000 population
Hara	4,801	14	3
Hardibo	4,019	9	2.24
Gobeya	5,459	1	0.18
Paso mili	1,394	1	0.72
Total	15,673	25	

Age specific attack rate

Attack rate of influenza outbreak in in the age category of 5-14 was 0.28 per 1000 risk population. The total attack rate of influenza outbreak in the district was 0.23 per 1000 population.

Table 9: age specific attack rate of influenza outbreak in Tehulederie, South Wollo zone, Amhara Region, 2016

Age category	Total population at risk	Total number of influenza cases	Attack rate per 1000 population
0-5 age group	10,127	1	0.09
5-14 age group	28,989	8	0.28
>15 age group	80004	16	0.2
total	108,993	25	0.23

Clinical presentation

During the outbreak most influenza cases were presented clinical symptom of fever and cough which accounted 96% of the total suspected influenza cases in the district as shown in the table below.

Table 10: Frequency of clinical symptom among the total influenza cases in Tehulederie district, Ethiopia, 2016

symptom	frequency	percent
cough	24	96%
fever	24	96%
chills	6	24%
chest pain	4	16%

vomiting	2	8%
diarrhea	0	0%
headache	21	84%
sore throat	19	76%
difficulty in breath	5	20%
SOB	5	20%
joint pain	11	44%
sneezing	20	80%

Onset of influenza outbreak

The first case of suspected Influenza like illness came to Hara health center at 3/1/2016. He was a farmer and 45 years of age. The patient had history of travel to the neighbour town Dessie and participated at weeding party. The outbreak persisted for two weeks and finally it ends and no more influenza case was reported after 17/3/2016.

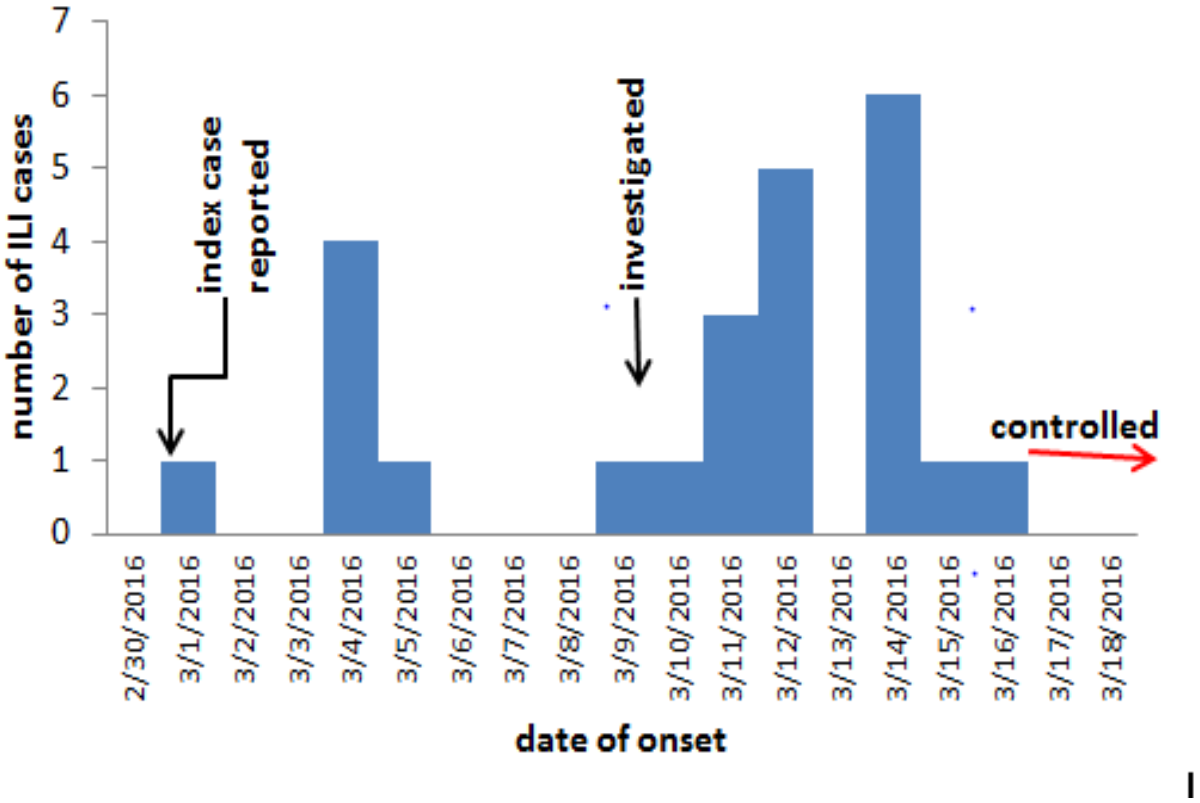

Figure 8: Date onset of influenza in Tehulederie district, Amhara Region, Ethiopia 2016

Analytical investigation

In the analysis the dependent variable was case status and some of independent variables were educational level, travel history, contact history, age, sex, marital status, sick person in the family and occupation. After testing all the variables by bivariate logistic analysis, all the variables with P value >0.2 were included in the analysis and compared by using multivariate logistic regression.

In bivariate logistic analysis age, sick person in the family, travel history and sex were significant variables with ILI; but variables like, educational level, occupation, marital status, family size, knowledge for transmission of ILI were insignificant factors for influenza like illness.

Table 11: Bivariate logistic regression of independent factors with ILI, Tehulederie district, Amhara region, Ethiopia

				COR	95% CI for OR		P-value
		Control (%)	Case (%)		lower	upper	
Traveled history	No	46(92%)	17(68%)				
	Yes	4(8%)	8(32%)	5.34	1.409	19.889	0.014
Sick person in the family	No	36(72%)	10(40%)				
	Yes	14(28%)	15(60%)	3.8	1.363	10.318	0.01
sex	1-male	27(54%)	9(36%)	2.1	.809	5.883	0.123
	2-female	23(46%)	16(64%)				
age				0.924	.881	.970	0.001

According to our result in multivariate logistic analysis sick person in the family, age and travel history were significantly associated factors with ILI. In multivariate logistic regression having sick person in the family, travel history to influenza affected area and age were significant associated factors for influenza like illness with AOR=5.8, 95%CI (1.37, 24.78) , AOR=7.49, 95% CI (1.41, 39.68) and AOR= 0.92, 95%CI (0.86, 0.97) respectively as shown in the table below.

Table 12: Multivariate logistic regression of independent factors for ILI, Tehulederie district, Amhara region, Ethiopia, 2016

				AOR	95% CI for OR		P-value
		Control (%)	Case (%)		lower	upper	
Traveled history	No	46(92%)	17(68%)				
	Yes	4(8%)	8(32%)	7.486	1.412	39.677	0.018
Sick person in the family	No	36(72%)	10(40%)				
	Yes	14(28%)	15(60%)	5.833	1.373	24.781	0.017
sex	1-male	27(54%)	9(36%)	3.088	.794	12.020	0.104
	2-female	23(46%)	16(64%)				
age				.917	.864	.972	0.004

Interventions during the study

Health education was given for the affected and non-affected community about transmission treatment and prevention of influenza like illness. Short term onsite training on influenza like illness was also given to health workers and health extension workers.

Discussion

Attack rate of female (16) was 0.32 per 1000 females' population but in males (9) it was 0.15. Similarly an outbreak investigation conducted in secondary school Ashanti, Ghana (2010) showed that females (91.7%) were more infected than males during the outbreak (6). But a study conducted in Thailand, females were 43.7% (7/16) and 56.3 %(9/16) were males.

Attack rate of influenza outbreak was 0.28, 0.2 and 0.09 in the age category of 5-14, >15 age group and <5 age group respectively. An outbreak investigation conducted in secondary school Ashanti, Ghana (2010) showed that the clinical attack rate was 9.9% (6). Of the total 25 cases included in this study 16 were >15 years age (64%) and nine were <15 years age (36%). A study conducted in Thailand 16 patients included in the study, nine (56%) were aged <15 years (7). In Germany (2009) from the 9,950 cases, 54% were male. The median age in this study was 19 years (range: 0-89 years). An outbreak investigation conducted in Ashanti secondary school, Ghana (2010) showed that the mean age of the students meeting the case definition was 17.8 years (95% CI 17.5-18.1), with a range of 16 to 20 years. The majority of cases (77%) were from 10 to 29 years old. Two per cent of the cases were younger than five years (8).

Of the total 25 cases 24 had both fever and cough, 5 were shortness of breath.

A study conducted in Thailand showed that all patients had fever respiratory symptoms predominated, including cough (12 patients [75%]), sputum (12 [75%]), dyspnea (11 [69%]), and rhinorrhea (seven [44%]) ; Four (25%) patients had gastrointestinal symptoms among 16 cases. A study in united states showed that the symptoms of 2009 H1N1 flu virus in people include fever, cough, sore throat, runny or stuffy nose, body aches, headache, chills and fatigue. Outbreak descriptive Study in Kolkata, India (2010) showed that the commonest symptoms included fever (100%), cough (73%), running nose (54%), sore throat (43%), respiratory distress (25%) and diarrhoea (4%) (9). some people may have vomiting and diarrhea. People may be infected with the flu, including 2009 H1N1 and have respiratory symptoms without a fever (10).

In multivariate logistic analysis sick person in the family was significantly associated factors for contracting for influenza like illness with AOR=5.83, 95%CI (1.37, 24.78). Similarly an outbreak investigation conducted in secondary school Ashanti, Ghana (2010) showed that the index case had contact with a suspected case while visiting her parents outside the school(6). So our finding suggested a transmission rate of Influenza like illness (H1N1 virus) infection in the family and closed community. Travelled history to influenza affected area was significantly associated for contracting influenza like illness with AOR=7.49, 95% CI (1.41, 39.68). Case control study conducted among school children in Beijing, China (2010) also found that use of closed modes of transportation for travelling was a risk factor (11). If people traveled to an area where many people are affected by swine flu (H1N1 flu), they may have been exposed to the virus, particularly if they spent time in large crowds (12).

Limitation of the study

In this study the number of sample size might be small, so problem of generalization might be happened. All data were collected from the response of interviewer, not based on medical record and laboratory result of cases.

Conclusion

According to our result in multivariate logistic analysis sick person in the family and travel history to influenza affected area were significantly associated factors for contracting influenza like illness, but age was a protective factor for influenza like illness.

Recommendation

Tehulederie district health office and Hara health center should strengthened health education and awareness about influenza like illness and use open transportation system to the community. Sick persons in the family should cover their mouth when they sneezing and coughing to reduce transmission to the healthy family.

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1.3. Acute Watery Diarrhea Outbreak Investigation at Andasa Holly Water, Bahir Dar Zuria district, Amhara Region, Ethiopia, 2016

Abstract

Introduction

Cholera is a diarrheal disease caused by infection of the intestine with the gram-negative bacteria Vibrio cholera, either type O1 or O139. Both children and adults can be infected. Cholera remains a major public health problem and affects primarily developing world populations with no proper access to adequate water and sanitation resources. Cholera represents an estimated burden of 1.4 to 4.0 million cases, and 21 000 to 143 000 deaths per year worldwide. The objective of this study was to investigate the outbreak, determine the etiologic agent of the outbreak and to identify source of infection in order to take possible intervention measures at Andasa holly water in 2016.

Methods and materials

We conducted a descriptive cross-sectional study design to determine etiologic agent and possible source of infection for acute watery diarrhea. The study was conducted from 07/12/2016-24/12/2016 at Andasa holly water by reviewed all available epidemiological, clinical and laboratory data of AWD cases. After cleaning and checking the data was entered to a computer using Excel spread sheet and analyzed by SPSS version20 software.

Result

A total of 254 suspected cases and, 5 confirmed cases with 5 deaths (2%) were reported in between august 8/2016 and September 27/2016. Four suspected cholera cases stool sample were sent to regional laboratory for cholera investigation of which all sample were confirmed positive for vibrio cholera. The overall attack rate and case fatality rate was 0.65% and 2 % respectively with sex specific attack rate of 6 and 6.7 per 1000 female and male population respectively. Among the total number of 259 cases, 98 %(254) were used river water for drinking, cooking and other purposes.

Conclusion

Case fatality rate of AWD was higher at Andasa Holly water. Among the total AWD affected patients all most all were drunken unprotected water. The most common symptoms experienced by Cholera patients were diarrhea and vomiting. The area was generally with poor environmental hygiene sanitation and latrine was not available. Vibrio cholera 01 serotype indaba was responsible for the acute watery diarrhea outbreak in Andasa holly water.

Ministry of health, Amhara regional health bureau and religious institution at all levels should provide safe water drinking. Latrine and liquid waste disposal should also be constructed in the Holly water. Immediate and appropriate fluid replacement for AWD patients must be also improved and strengthened.

Key words

Acute watery diarrhea, holly water, Andasa, outbreak

Introduction

Cholera is a diarrheal disease caused by infection of the intestine with the gram-negative bacteria Vibrio cholera, either type O1 or O139. Both children and adults can be infected. It is one of the key indicators of social development and remains a challenge to countries where access to safe drinking water and adequate sanitation cannot be guaranteed (1).

Its short incubation period of two hours to five days enhances the potentially explosive pattern of outbreaks. Cholera is transmitted through fecal contamination of water or food and can result in hypovolemic shock and death if not promptly treated with fluids. Transmission is closely linked to inadequate environmental management. The disease is a key indicator of lack of social development. Risk factors for cholera outbreaks include poor access to safe drinking water, contaminated food, inadequate sanitation, and large numbers of refugees or internally displaced persons (IDPs) (1, 2).

Cholera is one of the oldest diseases affecting humans. It is caused by the gram-negative bacteria Vibrio cholera. A new strain appeared in 1992, V. cholera O139. An estimated 2.8 million cholera cases occur each year in endemic countries, and the average global annual incidence rate is 2.0 cases per 1000 people at risk(2).

In 2015, 172 454 cases and 1304 deaths of cholera were reported to WHO worldwide. Outbreaks continued to affect several countries. Overall, 41% of cases were reported from Africa, 37% from Asia and 21% from the Americas. Cholera remains a major public health problem and affects primarily developing world populations with no proper access to adequate water and sanitation resources (3).

In 2015, a total of 42 countries from all continents reported 172, 454 cases of cholera by WHO, of which 41% were reported from Africa and 37% from the Americas where a large outbreak that started in Haiti at the end of October 2010 also affected the Dominican Republic. Globally, however, the true number of cholera cases is known to be much higher. Cholera represents an estimated burden of 1.4 to 4.0 million cases, and 21 000 to 143 000 deaths per year worldwide. In 2015, reported cases worldwide represented a 9% decrease compared to 2014 (172 454 vs. 190 549) (4).

The overall incidence of the disease has been reduced by half since 2011 and fatality rates were below one per cent, the standard global alert threshold defined by the World Health Organization.

Of the 698,304 suspected cholera cases reported since 2010, only 6 per cent were reported during 2013 Compared to 51 per cent in 2011.

Though the number of new suspected cases has considerably diminished, Haiti is still reporting the highest number of cholera cases in the world. From January to December 2013, Haiti reported 58505 cases and 610 deaths while all other countries in the world combined reported 30,266 cases and 573 deaths over the same period. With the start of the 2013 rainy season, the number of new cases rose from 2,717 in April 2013 to 6,300 in November 2013. The institutional fatality rate (the number of suspected cholera victims who die in cholera treatment facilities) in 2013 (0.98%) is higher than at the same period last year (0.83%), reflecting a deterioration in the capacity of health centers to provide timely and adequate health services to cholera-affected patients(5).

In Ethiopia it was indicated that, there was acute watery diarrhea (AWD) epidemic in 1990 persisted with recrudescence of cases till 1998 (6). Moreover, from July 2008 to June 2009 Ethiopia, there were a total of 9485 cases and 193 deaths (with case-fatality rate 2.0%) of acute watery diarrhea in six regions including Addis Ababa region took the country‘s highest share of [2,988(31.5%)] and deaths [99(51.25%)] of AWD case fatality rate of 3.3%. This study helps to investigate AWD outbreak and determine etiologic agent of the outbreak, possible source of the outbreak and to take possible intervention measures at Andasa holly water in 2016.

Objectives

General objective

To investigate AWD outbreak, determine etiologic agent of the outbreak, identify possible source of the outbreak and to take possible intervention measures at Andasa Holly water.

Specific objectives

To confirm the presence of AWD outbreak at Andasa holly water in 2016

To describe the outbreak in terms of place, person and time variables at Andasa holly water in 2016

To identify source of AWD transmission and etiologic agent at Andasa holly water in 2016

To guide control and prevention measures at Andasa holly water in 2016

Materials and Methods

Study area and population

Andasa is found 17 km away from Bahir Dar, town of Amhara region. In this kebele most of the residents‘ religion was orthodox. Large holly water is found in this kebele with three km away. Most people from different part of the country were come to this holly water believing to get free from their disease and problem. According to the previous registration data approximately 40,000 people might be visit the holly water especially during orthodox holly days and fasting period. In this holly water river water sources were used for drinking. The largest river Abbay is crossed this area. All people in the holly water used small river and Abbay River for drinking, cooking, washing and summing purposes.

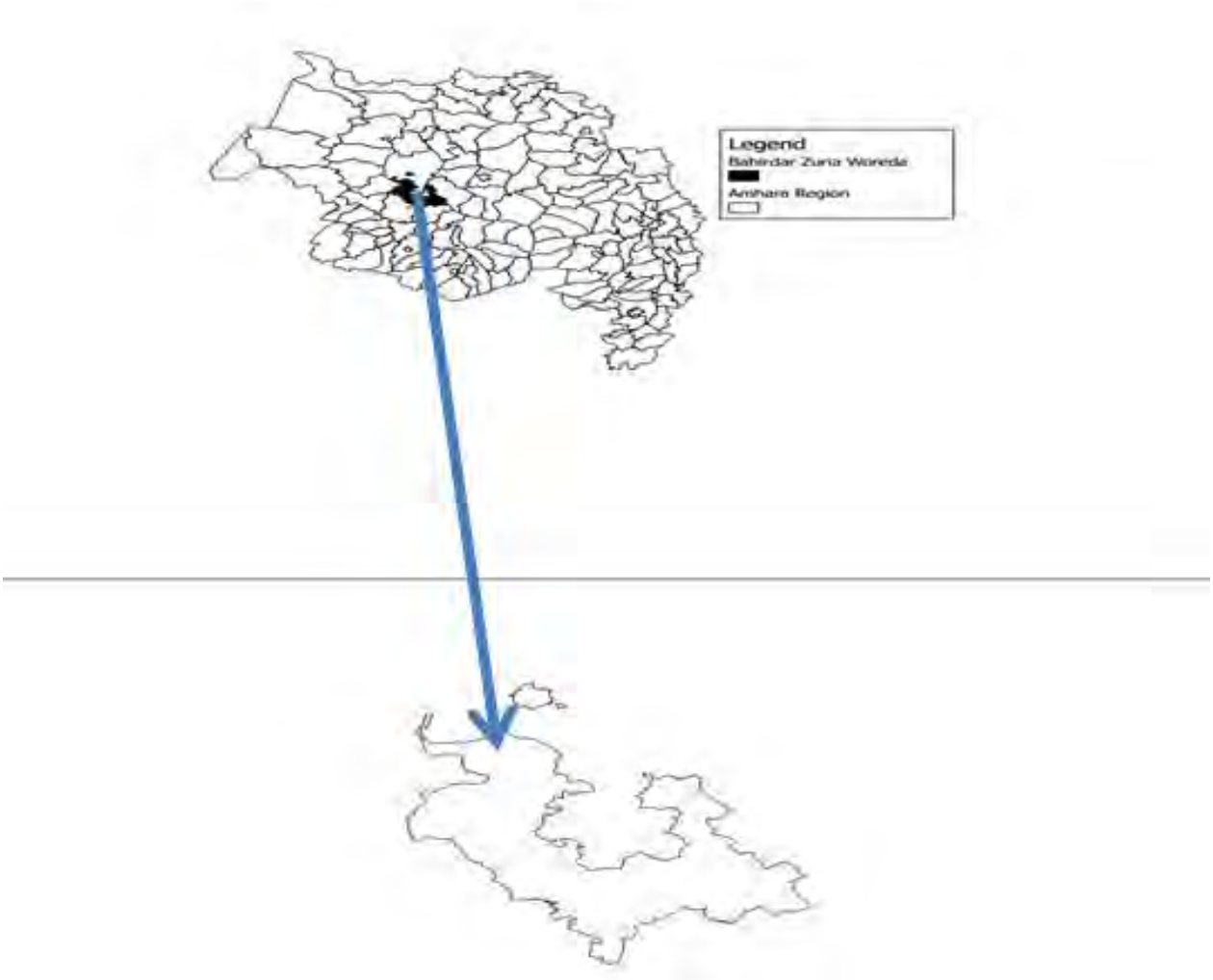

Figure 9: Location of Bahir Dar Zuria district in Amhara region, Ethiopia, 2017

Source population

Population found in Andasa holly water during the study period

Study population

Population found in Andasa holly water during the study period

Study period

The study was conducted from 2/12/2008-14/12/2008 EC

Study design

We conducted a descriptive cross-sectional study design to determine possible source of infection for acute watery diarrhea in the area based on detailed standardized format which includes variables like demographic information, incubation period, and clinical symptom, source of drinking water, laboratory investigation and onset of acute watery diarrhea.

Case definition

Suspected case definition: A case of cholera should be suspected when:

In an area where the disease **is not known to be present**, a patient aged 5 years or more develops severe dehydration or dies from acute watery diarrhea;

In an area where there is **a cholera epidemic**, a patient aged 5 years or more develops acute watery diarrhea, with or without vomiting.

At the health post and at community levels, a suspected cholera case can be defined as follows:

Any person 5 years of age or more with profuse acute watery diarrhea and vomiting

Confirmed case definition: A suspected case in which Vibrio cholerae O1 or O139 has been isolated from their stool (1).

Sampling technique and procedure

All AWD cases were included in the study by using standardized patient line list.

Variables in the study

The following variables were included in our study. These were:

Personal identification

Clinical sign and symptom

Travel history

Source of drinking water

Laboratory investigation and results

Patient outcome

Type of cases

Dehydration status

Contact history

Data collection

We used semi-structured questionnaires and interviewed cases, and collected data such as demographic, clinical symptom, possible associated factors and other related variables for the illness.

Data Quality assurance

One hour orientation on the questionnaire was given to the data collectors and the collected data was checked daily during the investigation period. Data was cleaned and checked for inconsistencies and missing values. This cleaning was done by running frequency of variables using Epi Info version 7 by the principal investigator before the actual analysis.

Data Analysis

All collected data was checked and entered to a computer using Excel spread sheet and analyzed by SPSS version20 software.

Descriptive statistics was conducted to calculate attack rate, proportion, rate, and frequency of acute watery diarrhea by using SPSS version20.

Ethical issue

Support letter was written by Amhara Regional Health Bureau to Andasa health center in order to collect data. Informed consent was taken from all respondents before interview and all agreed to take part in the investigation were included.

Results

Period of the outbreak

Acute watery diarrhea outbreak in Andasa holly water was reported after four suspected cholera cases were visited Feleg Hiwot Hospital at august 1/20008. These four cases were admitted and treated at hospital and they survived. Prior to the onset of diarrhea suspected cases were in the holly

water of Andasa and they drank holly water. The number of AWD cases were increased sharply and reach highest pick at August 7/2008 EC; and decreased sharply after 12/7/2008 to August 11/2008 EC. One last AWD case was reported at 17/1/2016 but no AWD case was reported after this date by Andasa health center as shown in the Epi curve below.

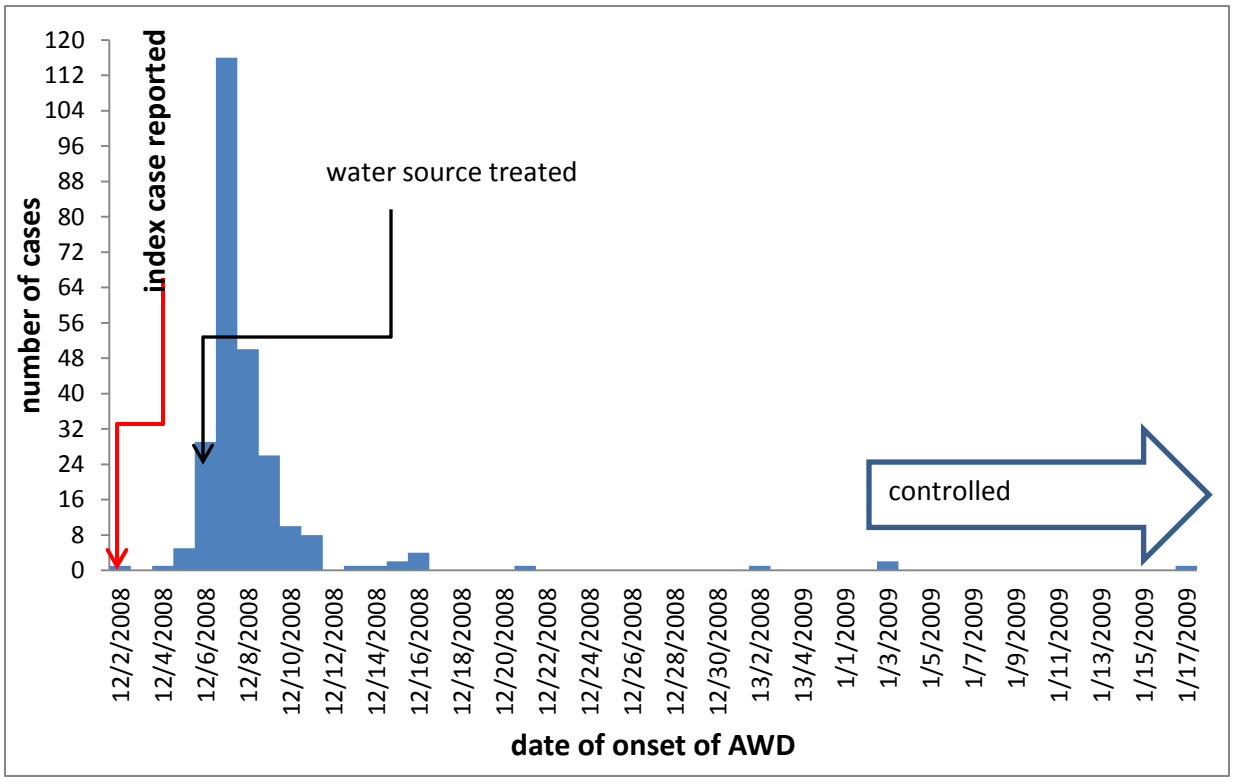

Figure 10: Epicurve for acute watery diarrhea, Andasa holly water, west Gojam zone Amhara Region, Ethiopia, 2016

Laboratory result of stool and water sample

At the beginning of the outbreak four suspected acute watery diarrhea cases of stool sample were sent to Bahir Dar regional laboratory for stool culture investigation of whom all stool samples were positive for vibrio cholera O1. During the occurrence of the outbreak five extra stool sample also done by rapid diagnostic test of whom five were positive for vibrio cholera O1.

The holly water was springily from the ground and unprotected. It was cloudy and salty taste in nature. Holly water sample was also sent to Bahir Dar regional laboratory for bacteriological analysis which was showed culture positive for vibrio cholera.

Figure 11: physical view of Andasa holly water in west Gojam zone, Amhara region, Ethiopia, 2016

Magnitude of the outbreak

The outbreak was wide spread from Andasa district and to other district of the region due to evacuating of exposed people from holly water to origin of their residency before shedding of the incubation period. A total of 254 suspected cases and, 5 confirmed cases with 5 deaths (2%) were reported in between August 2/2008 to September 17/2009. The overall attack rate was approximately 6.5 per 1000 population (259/40,000 population) among holly water users with sex specific attack rate of 6 and 6.7 for females and males respectively.

Age sex distribution of cases

The affected ages ranged from 1 year to 70 years with mean age 27.5, median 25, standard deviation 11.87 and 75 percentile of 30 ages. Most affected age groups were 15-44 (213) and the least was 5-14 age groups (9). A total of 136(52.5%) males and 123 (47.5%) females were affected by the outbreak as shown in the table below.

Table 13: Number of affected age groups by AWD in Andasa holly water, Bahir Dar Zuria district, Amhara region, Ethiopia, 2016

age category	number of cases	Percentage
≤5	1	0.4
5-14	9	3.5
15-44	213	82
≥45	36	14
Grand Total	**259**	**100**

Case distribution by place

Permanent residency of most cases among holly water users were from West Gojam (48%) and South Gonder (19.3%) zones. Of the total 259 cases, 21(8%) were from North Gonder zone and 29(11.2%) were from Bahir Dar Town.

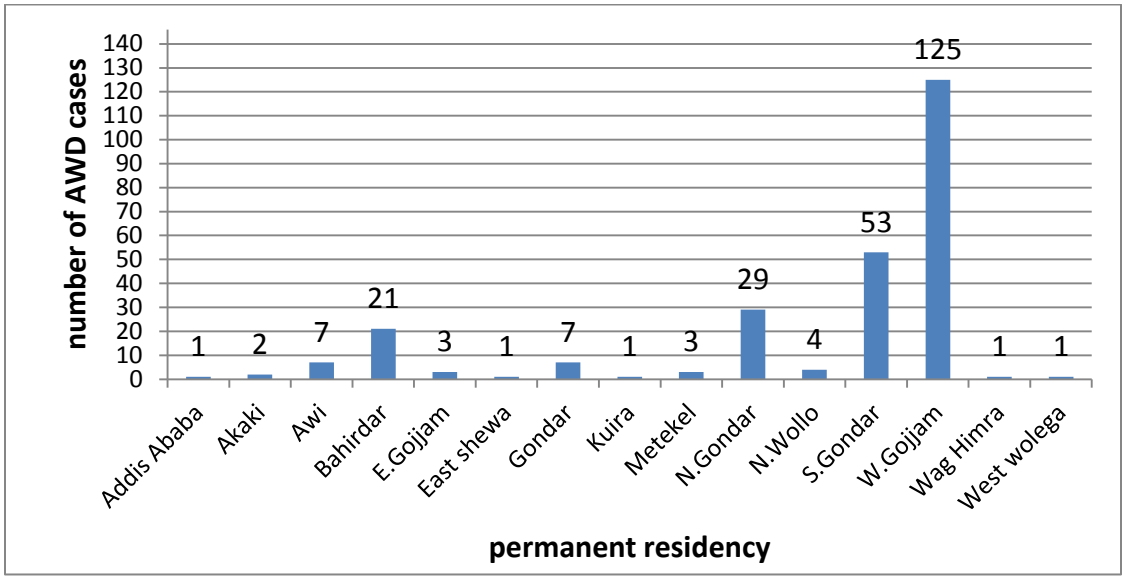

Figure 12: Distribution of AWD cases by residency area in Andasa holly water, Amhara Region, Ethiopia, 2016

Stay of patients in admission

The range of days stay in admission at treatment center was 1-9 days with mean 3.3 days, median 3 and standard deviation 3.8 days. Among the total number of cases with acute watery diarrhea, 50 %(178) of cases were stay less than 3 days in cholera treatment center (CTC). Of the total number of 259 cases, 75% (232) were stay less than four days in CTC.

Table 14: Number of days stay in admission among AWD cases in Andasa holly water, Amhara region, Ethiopia 2016

Number of days stay in admission	Number of cases in admission	Percentage
0	8	3%
1	19	7%
2	53	20%
3	98	38%
4	54	21%
5	11	4%
6	12	5%
8	3	1%
9	1	0%
grand total	259	100%

Figure 13: AWD Patients admitted at CTC in Andasa holly water, Amhara Region, Ethiopia, 2016

Risk factors and clinical symptoms

Water source

Among the total number of 259 affected AWD cases, 98 %(254) were used river water for drinking, cooking and other purposes.

Table 15: Source of drinking water among AWD cases Andasa holly water, west Gojam, Amhara, Ethiopia 2016

type of water source	number of cases	percent
Bono	3	1.2%
River	254	98%
Tap water	2	0.8%
Grand Total	**259**	**100%**

Occupation

More than 90% of the cases affected by acute watery diarrhea were farmers and students. Among the total cases affected by AWD, 66% were farmers, whereas 25% were students. But food handlers, merchants, children, waiters and teachers were less affected group by the outbreak as shown in the table 4 below.

Table 16: Distribution of cases by occupation in Andasa holly water, Amhara, region, Ethiopia, 2016

Occupation	Number of cases	Percentage
child	4	2%
Farmer	171	66%
Food Handler	1	0%
House Wife	2	1%
Merchant	1	0%
NO	2	1%
Student	66	25%

Teacher	7	3%
Waitress	2	1%
blank	3	1%
total	259	100%

Level of dehydration

Among the total cases admitted by acute watery diarrheal disease, 58.3%, 39.4% and 2.3% were sever, some and no dehydration respectively. Watery diarrhea and vomiting was manifested clinically by all admitted AWD cases.

Table 17: Level of dehydration among AWD cases in Andasa holly water, West Gojam, Amhara region, Ethiopia, 2016

level of dehydration	number of cases
No	6(2.3%)
Sever	102(58.3%)
Some	151(39.4%)
Grand Total	**259**

Environmental assessment

The area was generally with poor environmental hygiene sanitation where the case resides. There was no latrine in the assessed holly water as a result all holly water users urinate and defecate openly near to their drinking source of river. There was no any fluid and solid waste disposal system. No any pipe or bono type of water supply in the holly water in case they used river water for drinking and other purpose. We observed many water containers which used for drinking of holly water and stored of drinking water that accumulated and put in openly unsafe area. Small River originated around the holly water which contaminated by solid wastes and liquid wastes was added to the main river which used for drinking.

Figure 14: Small water containers and Jerricans openly accumulated around Andasa holly water in Amhara region, Ethiopia, 2016

Figure 15: During assessment and observation of holly water environment at Andasa in Amhara region, Ethiopia, 2016

Possible hypothesis for why the outbreak occurred

Due to findings that, a high proportion of the cases drank water from unprotected source, most likely to have been contaminated and accompanied inadequate safe water supply and poor sanitation facilities as well as laboratory investigation, the following hypothesis was formulated The outbreak in Andasa holly water could be associated with;

- Drinking water from contaminated river
- Poor personal hygiene practices
- Poor environmental sanitation
- Contaminated holly water

Interventions during the study

After we observed and conducted laboratory analysis of the holly water it was treated by chlorine. We also educated holly water users about prevention and transmission of acute watery diarrheal disease. We also conducted active case search around the holly water sleeping area and transferred them to cholera treatment center. We also distribute water treatment chemicals like Bishangary and water guard to the holly water users.

Discussion

Among holly water users the most affected people by acute watery diarrhea were 15-44 age groups (213/259). Males accounted 52.5% (136/259). Similarly case control study in Akwanga, Nigeria in 2013 Out of 18 cases patients, 10(55.6%) were male while 8(44.4%) were female(7). And also a study conducted in Ghana in 2010 of 136 case-patients, 77 (56.6%) were males (8). The outbreak predominantly affected adults and isolation pathogenic strain of cholera organisms in four (4) of cholera stool samples from Andasa health center in Andasa holly water confirm that the outbreak was caused by vibrio cholera O1.

The overall attack rate and case fatality rate was 0.65% and 2 % respectively which was smaller than 0.9% and 4.4% cholera outbreak occurred in Afar in 2009 (9), but higher than a study conducted in Cameroon in 2011 which was cholera attack rate 0.03 % with no fatality (10). The overall attack rate in this study (648 per 100,000 populations) was higher as compared with investigation conducted in Greater Accra in 2014 (25 per 100,000 populations). The case fatality was high as compared to the WHO guideline, which was supposed to be 1% (11). It was also higher than as compared with a study conducted in oromia, Ethiopia in 2006 and Greater Accra which was 0.5 % and 1.2% respectively (12). The reason might be most people found in the holly water were

chronically debilitated patient and with low immunity. Affected age groups were 82%, 14% and 3.5% respectively in the age category of 15-44, >45 and 5-14 age group respectively. A total of 136(52.5%) males were affected by the outbreak low as compared with a study conducted in Afar 2009 which was 87.8% (3). Study in Afar region also showed that 52.1 %(9) in the age group of 15-44 were affected which was lower as compared with this study (82%).

Watery diarrhea and vomiting was manifested clinically by all admitted AWD cases in this study. Similarly most common symptoms among Cholera cases were diarrhea 46 (100%) and vomiting 34(73%) during an investigation in Greater Accra in 2014(8).

Among the total AWD patients at Andasa holly water 58.3% were sever cases which was higher as compared to the WHO guideline which supposed to be 5%. This difference might be presence of concomitant infection in most cases of Andasa holly water users. In the past surveillance activities there was no history of vibrio cholera reported by health facilities in the area as the same week of this year. Therefore this abnormal number of cases was a clear indication of acute watery diarrhea outbreak in the area. Cloudy color and salty taste of the holly water might be indicated / hypothesized/ the water was favorable condition for the presence of vibrio cholera.

Conclusion

The overall attack rate and case fatality rate of AWD in Andasa Holly water was higher. All most all AWD affected people were used unprotected river water for drinking. All AWD patients experienced watery diarrhea and vomiting. More than half of AWD affected cases were sever. The area was generally with poor environmental hygiene sanitation where the case resides.

Recommendation

Health workers in Andasa health center should improve proper case management in order to minimize death among AWD cases. Health workers should classify dehydration level of AWD cases properly to manage accordingly. Amhara regional health bureau, Water and mineral development bureau, non-government organizations, and religious institution should construct latrine, solid and liquid waste disposal and avail safe water drinking supply in the holly water.

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Chapter two – Data analysis

2.1. Seven years of Visceral Leishmaniasis Surveillance Data analysis at Medicine Sans frontier's Abdurafi Treatment Center in West Armachiho District, Ethiopia 2016

Abstract

Back ground

Leishmaniasis currently threatens 350 million men, women and children around the world. Visceral leishmaniasis is a fatal parasitic disease mostly prevalent in lowland areas and affects migrant agricultural workers. Visceral leishmaniasis is caused by the Leishmaniasis donovani complex, which includes Leishmaniasis donovani and Leishmaniasis infantum. An estimated 200,000 to 400,000 new cases of occur worldwide in each year. This study helps to understand the trend, magnitude and mortality of visceral leishmaniasis at Medicine Sans Frontiers Abdurafi treatment center in the study period (2009-2015).

Methods

Retrospective secondary data analysis was conducted on monthly kala-azar report of MSF Abderafi treatment center in West Armachiho district. We included a total of 11680 patients screened for leishmaniasis in 2009-2015. We entered and analyzed data by Microsoft excel spread sheet.

Result

Among 11680 patients screened for kalazar in the study period (2009-2015), 2131 were primary kalazar cases, 198 kalazar were relapse and 19 were post kalazar dermal leishmaniasis. The case fatality of kalazar ranged from 0.9% in 2014 (4/469) to 7.4% in 2013(22/296). The highest cure rate was in 2015 (96%), and the least was in 2009 (89%). The total case fatality rate during study period was 4% (92/2263). The highest HIV/Kala-azar coinfection was in 2009 which was 15%, and the least was in 2014 which was 4.8%.

Conclusion

Visceral leishmaniasis was highly prevalent in the area. There was high kala-azar mortality rate and majority of deaths were unrecognized. Prevalence rate of VL-HIV co-infection and relapse was higher at MSF Abdurafi kalazar treatment center in West Armachiho district.

Recommendation

Ministry of health should strength prevention and control mechanisms of kala-azar. Ministry of health and MSF Holland should conduct further studies for the cause of death among kalazar patients, because there may be drug toxicity or other complication.

Key words; Kala-azar, Leishmaniasis, Visceral, Surveillance, West Armachiho, Ethiopia

Introduction

Encompassing a complex group of disorders, leishmaniasis is caused by unicellular eukaryotic obligatory intracellular protozoa of the genus Leishmania and primarily affects the host's reticuloendothelial system. Leishmania species produce widely varying clinical syndromes ranging from self-healing cutaneous ulcers to fatal visceral disease. These syndromes fall into three broad categories: visceral leishmaniasis (VL), cutaneous leishmaniasis (CL), and mucosal leishmaniasis (ML).

VL (also known as kala-azar, a Hindi term meaning "black fever") is caused by the L. donovani complex, which includes L. donovani and L. infantum (the latter designated L. chagasi in the New World); these species are responsible for anthroponotic and zoonotic transmission, respectively (1). Parasites proliferate wherever there are cells of the mononuclear phagocyte system, most often in macrophages. These are most abundant in the spleen and liver and, consequently, infection leads to an enlargement of both of these organs. Bone marrow cells become infected, and patients develop pancytopenia (namely, depressed production of red blood cells, white cells, and platelets) and immunosuppression, making them susceptible to super infections (2, 3).

PKDL is a condition in which dermal lesions can be heavily parasitized in a subset of patients successfully treated for VL, and it occurs mainly in India and Sudan in patients infected by L. donovani (3, 4)

The incubation period is usually from 2 weeks to 18 months, (2) with gross inflammatory reactions within the viscera often developing 2–8 months after infection and any initial skin lesions, but VL symptoms can take years to appear. The disease is progressive and a symptomatic infection that is untreated is generally fatal, with a mortality rate of 75%–95 % (5).

India and neighboring Nepal, Bangladesh, Sudan, and Brazil are the four largest foci of VL and account for 90% of the world's VL burden, with India the worst affected. Zoonotic VL is reported from all countries in the Middle East, Pakistan, and other countries from western Asia to China. Endemic foci also exist in the independent states of the former Soviet Union, mainly Georgia and Azerbaijan. In the Horn of Africa, Sudan, Ethiopia, Kenya, Uganda, and Somalia report VL. In Sudan, large outbreaks are thought to be anthroponotic, although zoonotic transmission also occurs. VL is rare in West and sub-Saharan Africa.

Mediterranean VL, long an established endemic disease due to L. infantum, has a large canine reservoir and was seen primarily in infants before the advent of HIV. In Mediterranean Europe, 70% of adult VL cases are associated with HIV co-infection. The combination is deadly because of the impact of the two infections together on the immune system. IV drug users are at particular risk. Other forms of immunosuppression (e.g., that associated with organ transplantation) also predispose to VL. In the Americas, disease caused by *L. infantum* is endemic from Mexico to Argentina, but 90% of cases in the New World are reported from northeastern Brazil.

Leishmaniasis occurs in 98 countries most of them developing in tropical and temperate regions. Two million cases occur annually, of which 1–1.5 million are CL (and its variations) and 500,000 are VL. More than 350 million people are at risk, with an overall prevalence of 12 million. Although the distribution of Leishmania is limited by the distribution of sand fly vectors, human leishmaniasis is on the increase worldwide (1).

The number of reported co-infection cases increased rapidly during the 1990s with the spread of the HIV pandemic, increased awareness among reporting institutions, and the growing geographical overlap between the two diseases. By 2001, a total of 1911 co-infection cases had been reported. To date, as many as 35 countries throughout the world have reported cases of VL/HIV co-infection.

A concomitant HIV infection increases the risk of developing active VL by between 100 and 2320 times. In southern Europe, up to 70% of cases of visceral leishmaniasis in adults are associated with HIV infection (6).

The two diseases are mutually reinforcing. HIV-infected people are particularly vulnerable to VL, while VL accelerates HIV replication and progression to AIDS. The risk of treatment failure for VL is high, regardless of the drug used, and all co-infected patients will relapse – and eventually die – unless they are given antiretroviral therapy (ART)(7).

Literature review

The visceral form is present in 70 countries. The largest focus of VL is in the south-east Asian region, with an estimated 300, 000 cases in 2006. East Africa has approximately 30, 000 cases per year (8).

The reported case fatality rate for VL in Brazil in 2006 was 7.2%. In the Indian subcontinent, the focus responsible for the largest proportion of global VL cases, reported case fatality rates ranged from 1.5% (93 deaths/6224 VL cases from 2004–2008) in Bangladesh to 2.4% (853/34,918) in India and 6.2% (91/1477) in Nepal(9).

Visceral leishmaniasis (VL, Kala-azar) is one of the growing public health challenges in Ethiopia with over 3.2 million people at risk and estimated up to 4000 new cases per year (10).

Retrospective hospital based study in north West Ethiopia(2013) showed that the proportion of poor VL treatment outcomes was found to be 23.7%, of which 12.4% were death, 5.7% were treatment failure and 5.6% were non-adherence. In this study the patients‘ mean age was 25.9±9.6 years, and a majority of them (535, 89.9%) were in the age group of 16 to 45 years (11).

In Ethiopia, 535 cases (>90%) were reported by the Médecins sans Frontières VL treatment center in Kafta Humera district, in the northwestern region of Tigray. They correspond to all co-infection cases treated between 2003 and 2008. In this highly endemic area for VL, the rate of HIV co-infection among VL patients is 15–30% (7).

A study conducted in Gondar hospital showed that a total of 221 kala-azar patients participated in the study. Out of 212 visceral leishmaniasis cases tested for HIV, 87(41.0%) were HIV co-infected. Age > 20 years was independently associated with HIV co-infection. Out of 213 kala-azar patients

treated with sodium stibogluconate (SSG), 52 died, resulting in a case fatality rate of 24.4%. The case fatality rates among HIV positive and HIV negative kala-azar cases were 39.3% and 13.0%, respectively (12).

Both CL and VL are growing health problems in Ethiopia, with endemic areas that are continually spreading. The first case of VL in Ethiopia was documented in 1942 in the southern parts of the country. Now, there are an estimated 2,000 to 4,500 cases yearly, with endemic areas in the lowlands of the northwest, central, south and southwestern parts of the country. In the north, the vector is associated with Red Acacia and Balanites trees, in the south with termite hills. VL affects mainly children and young adults (13).

Several outbreaks occurred in Ethiopia. Between 2005 and 2008, an outbreak of VL occurred in Amhara Region (Libo Kemkem), where VL had not been reported before, with 2,500 cases and initially a very high mortality (14).

The incidence of HIV-Leishmania co-infection was 23% in 2008, far higher than anywhere else in the world. The real burden is likely to be higher, as only 17% of VL cases are screened for HIV in some facilities. The affected populations are mainly very poor male seasonal migrant workers that travel in the harvesting season from non-endemic highlands to the cotton, sesame and sorghum fields of Humera and Metema on the Sudanese border (15, 16). In Humera, the proportion of VL patients that was co-infected was 40% in 2006 (15). Retrospective cohort study conducted in Tigray, Ethiopia showed that the case fatality rate was 18.5% (146) (95% CI: 15.8–21.3%) (17).

Rational of the study

Morbidity and mortality of visceral leishmaniasis is highly prevalent in West Armachiho district and the disease is public health problem in Amhara region. Visceral leishmaniasis is highly fatal and neglected tropical disease which affects mostly poor people and highly work force in the region. The disease is highly co-infected with HIV and other diseases which accelerate and complicates a more severe form. This study provides information on VL magnitude and treatment outcome to the government and concerned body..

Objectives

General objective

To assess the magnitude and trend of visceral leishmaniasis treatment outcome in west Armachiho district at MSF Abdurafi treatment center (2009-2015).

Specific objectives

To describe the magnitude of visceral leishmaniasis in West Armachiho district MSF Abdurafi treatment center (2009-2015)

To describe the trend of visceral leishmaniasis treatment outcome in West Armachiho district MSF Abdurafi treatment center (2009-2015)

To describe the trend of kala-azar/HIV co-infection in West Armachiho district MSF Abdurafi treatment center (2009-2015)

Methods and materials

Study area and population

The study area was West Armachiho district, which is found in north Gondar zone of Amhara region. According to the data from district health office 300,000-500,000 estimated temporary migrant workers were come to the area in each year. In the area 45,257 total population were found in 2015, of which 23,084(51%) were males and 22,173 were females according to 2015 population projection data.

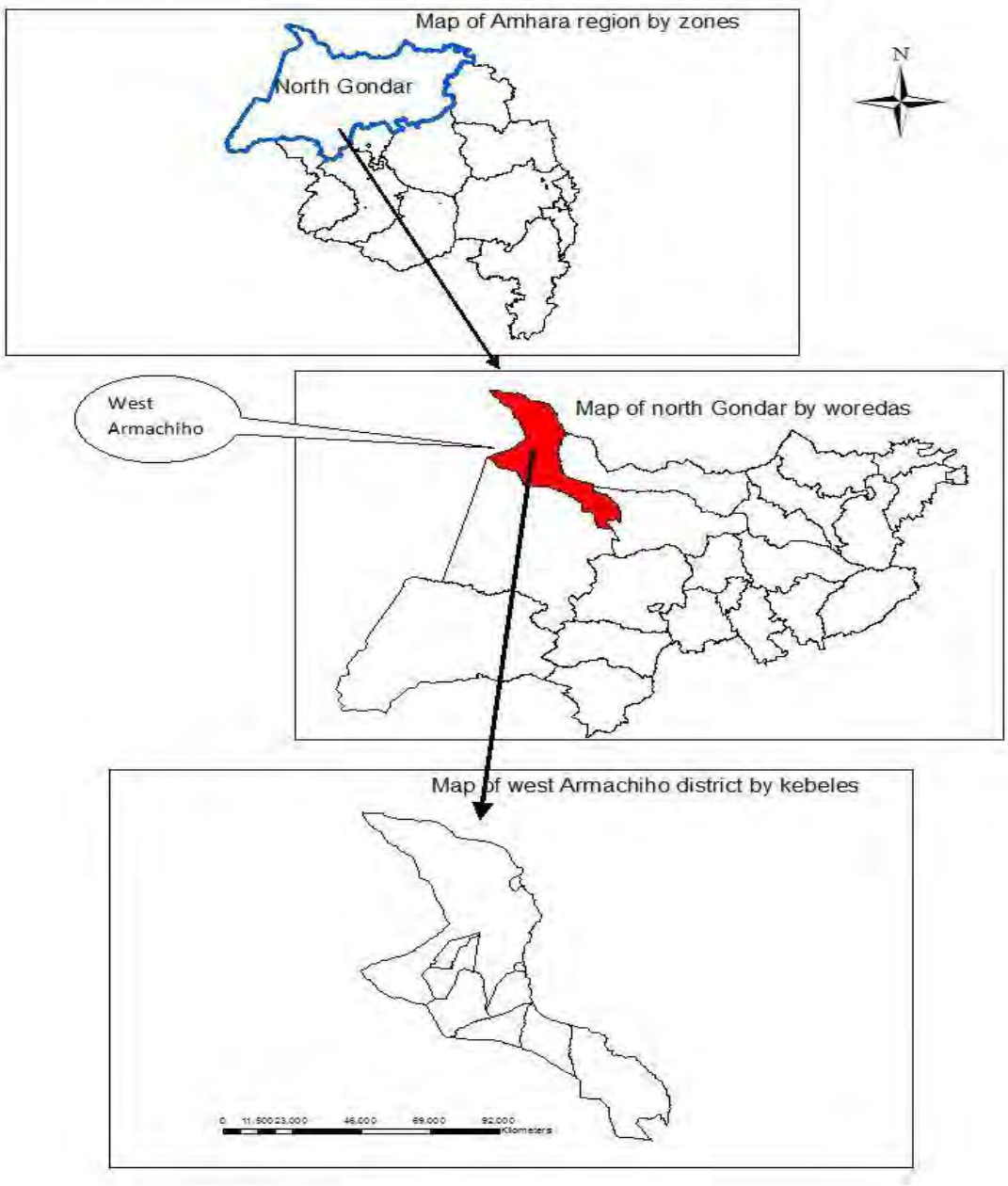

Figure 16: West Armachiho district location in Amhara region, Ethiopia, 2016

Case definition

Suspected case definition of VL

A person who presents with fever for more than 2 weeks with splenomegaly or lymphadenopathy

Probable case definition of VL

A person who presents with fever for more than two weeks and an enlarged spleen (splenomegaly) And/or enlarged lymph nodes (lymphadenopathy), or either loss of weight, anemia or leucopenia while living in a known VL endemic area or having travelled to an endemic area.

Laboratory Diagnosis

The commonly available serological tests in the treatment center were RK39 rapid diagnostic test (RDT) and the direct agglutination test (DAT).

Study design

Descriptive cross-sectional study was conducted on electronics Kalazar monthly report in the period of 2009-2015 at MSF Holland Abderafi treatment center.

Study period

The data was collected from February 20 to February 25 at MSF Abdurafi treatment center on monthly report of leishmaniasis during 2009 -2015.

Sample size

Total number of 11680 kalazar screened, cases and deaths over 7 year‘s period were included in the analysis.

Data source

Monthly kala-azar reported data of MSF Abdurafi treatment center in west Armachiho district from 2009-2015.

Data processing and analysis

After checking completeness of the data, it was entered and analyzed by Microsoft excels spread sheet.

Results

Kalazar treatment outcome

A total of 11,680 people were screened for Kalazar in the period 2009 to 2015 at MSF Abdurafi kala-azar treatment center. Among the total screened for kala-azar, 2682 were positive for kalazar which was 23 % total positivity rate. In 2009 there was highest positivity rate than the rest of 7 years which was 33%, and the least was in 2015 which was 19% positivity rate. From the total 2682 kalazar patients, 2343 kalazar patients were started treatment (87%). In the year 2009 and 2010 most of positive patients were started treatment, but in the year 2015 most patients were not started treatment. Among the total numbers of patients started treatment, 2131 cases were primary kalazar, 198 cases were relapse and 19 cases were post kalazar dermal leishmaniasis. In the period 2009 to 2015 kalazar started treatment, 2263 patients were exited from the treatment, of these 2096 patients were cured (92.6%), 92 kalazar patients were died (4%), and 18 patients were defaulted the treatment (0.8%).

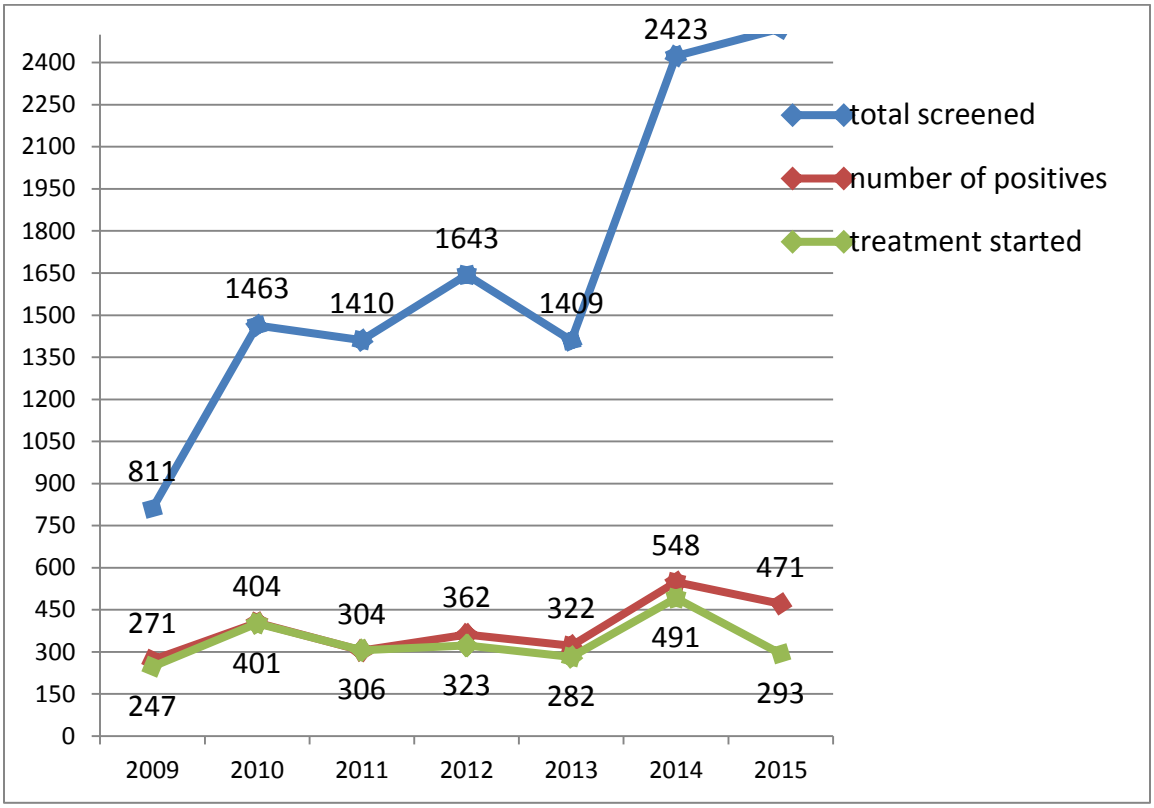

Figure 17: Trend of kalazar screening and number of positives by year West Armachiho district, North Gondar zone, Amhara, Ethiopia, 2009-2015

In the period 2009-2015 there were 198 cases of relapse. In 2011 there was the highest number of relapse which was 41, but the least was in 2009 which was 15 case of relapse. But in the period

2011 and 2013 there were 41 and 36 kalazar relapse respectively. Among the total number of 2682 kalazar cases, 2131 were primary kalazar cases and 198 kalazar cases were relapse. From the total 2343 kala-azar patients started treatment 8% were kalazar relapse.

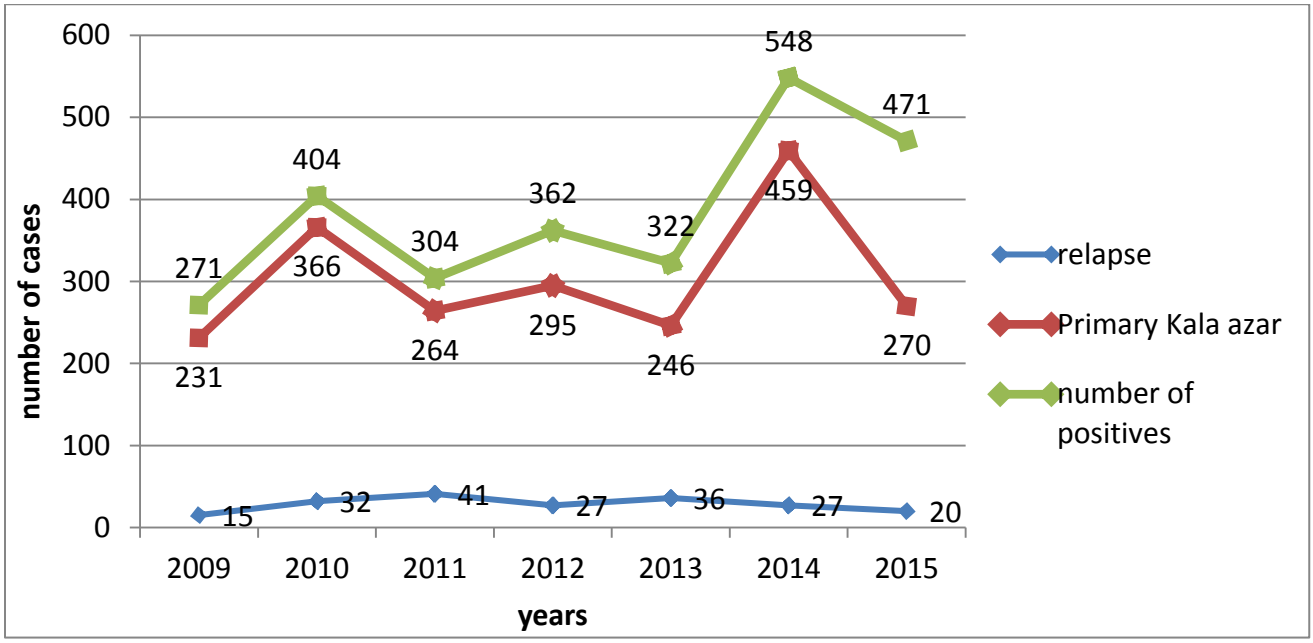

Figure 18: Trend of primary kalazar and relapse among positives by year in West Armachiho district, North Gondar zone, Amhara, Ethiopia, 2009-2015

Kala-azar Cure rate, relapse rate and positivity rate

In the period of 2009-2015 kalazar positivity rate was decreased. There was high positivity rate in 2009 which was 33%.

Among the total number of 2263 exited kalazar patients from treatment, 2096 were cured (92.6%). In 2009 there was 89% of cured rate, which was the least as compared with the rest of the study years, but the highest cure rate was in 2015(96%). In the study period the least and the highest kala-azar relapse rate was 6% and 16% in 2009 and 2011 respectively.

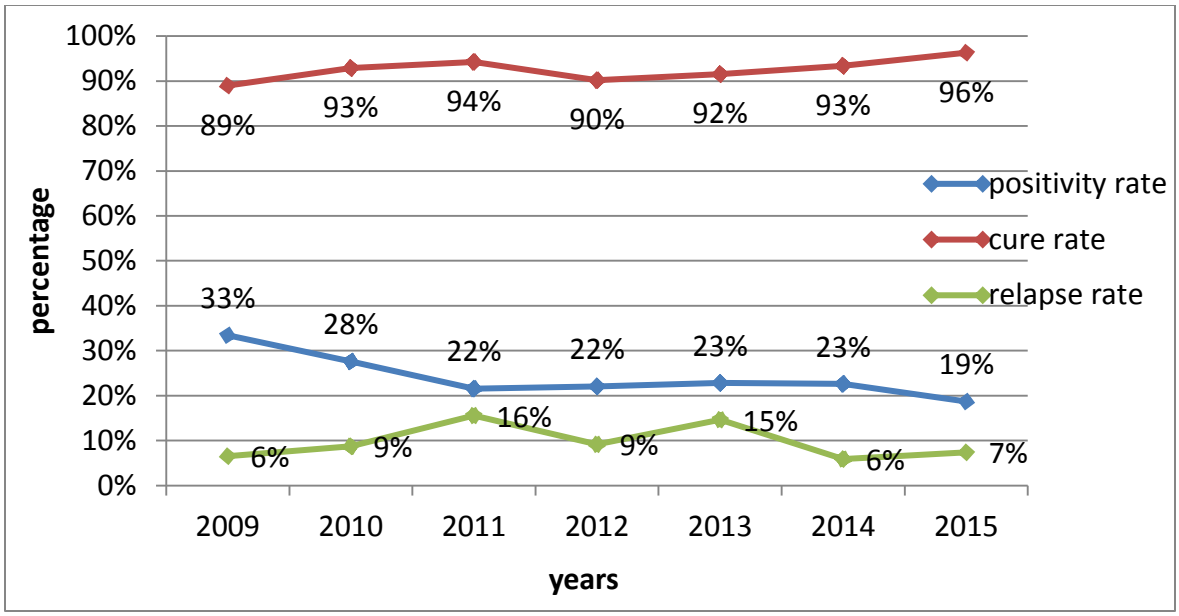

Figure 19: Trend of cure rate, relapse rate and positivity rate of kalazar in West Armachiho district, North Gondar Zone, Amhara, Ethiopia, 2009-2015

Kala –azar Mortality percentage

Among the total percentage of death in the study period 24% were dead in 2013. The least and the highest kala-azar death rate was 4% and 24% in 2014 and 2013. Among the total kala-azar death, 46% kala-azar case were dead in 2010 and 2013.

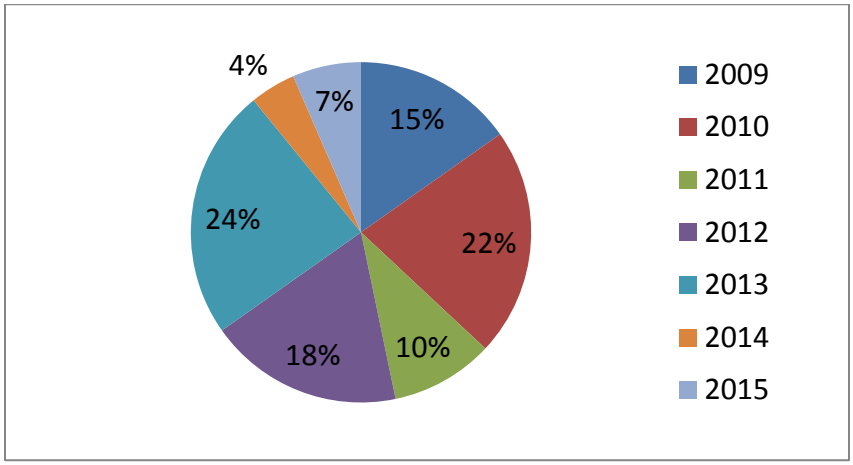

Figure 20: Percentage of kalazar death by year in West Armachiho district, North Gondar zone, Amhara, Ethiopia, 2009-2015

Kala-azar mortality rate and HIV co-infection

In the study period a total of 92 kalazar patients were dead with total mortality rate of 40.6 per 1000 kala- azar patients. The highest and the least kala-azar mortality rate was 74.3 and 8.5 per 1000 risk population in 2013 and 2014 respectively. From the trend of HIV- Kala-azar co-infection the highest HIV/Kala-azar coinfection was in 2009 which was 150, and the least was in 2014 which was 48 per 1000 kala-azar cases.

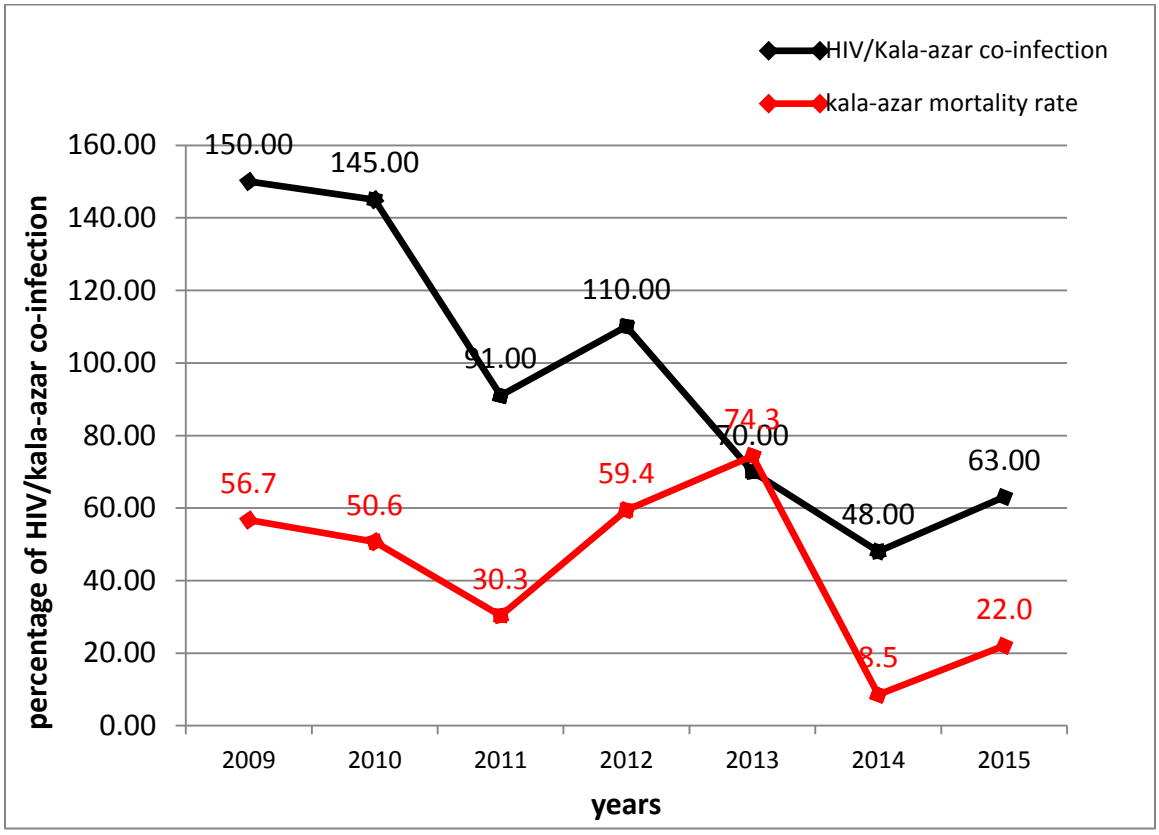

Figure 21: Trend of mortality rate of kalazar and HIV co-infection at MSF Abderafi kalazar treatment center in West Armachiho district, Amhara, Ethiopia, 2009-2015

Discussion

On average 13 (92/2263) persons per year were dead by visceral leishmaniasis within 7 years among kalazar patients exited at MSF Abderafi kalazar treatment center in West Armachiho district. The total case fatality rate reported by MSF Abdurafi kalazar treatment center in the study period was 4% (92/2263 VL cases from 2009-2015), which was lower than hospital-based deaths

case-fatality rate for VL in Brazil (2006) which was 7.2% and 6.2% (91/1477) in Nepal, but higher than reported case-fatality rates 1.5% (93 deaths/6224 VL cases from 2004-2008) in Bangladesh and 2.4% (853/34,918) in India (9). And also in MSF Abdurafi kalazar treatment center in West Armachiho district the highest case fatality rate reported in the study period (2009-2015) was 7.4% which was lower than a community based longitudinal study in south Sudan which showed that 20% case fatality rate of visceral leishmaniasis. The total case fatality rate in this study also lower as compared with a retrospective cohort study conducted in Tigray, Ethiopia which showed that the case fatality rate of 18.5% (15) and a retrospective hospital based study conducted in North West Ethiopia (2013) which showed that 12.4% case fatality rate of VL (11) .

The total cure rate of kalazar patients in the study period (2009-2015) at MSF Abderafi kalazar treatment center in West Armachiho district was 92.6 %(2096/2263). This cured rate was higher than kalazar cured rate of 90% which reported by Amhara region from 1998 to 2003 years (16). In MSF Abderafi kalazar treatment center the highest and the least cured rate in the study period(2009-2015) were 96% and 89% in 2015 and 2009 respectively, which was higher than the highest and the least kala-azar cure rate of 94% and 70% in 2006 and 2008 respectively reported by Amhara region(16). In this study the total Kala-azar/HIV co-infected was 12% which was lower than a study conducted at Gondar university hospital, northwest Ethiopia(1999-2004) which was out of 212 visceral leishmaniasis cases tested for HIV, 87(41.0%) were HIV co-infected(18). The prevalence of VL-HIV co-infection in MSF Abdurafi treatment center, West Armachiho district was higher than a cross sectional study conducted in North West Ethiopia (2014) which showed that the prevalence of VL-HIV co-infection was 10.4%(19).

Limitation of the study

Monthly kalazar data did not reported with variable sex and age of the patient due to this the study could not include analysis by sex and age category. Kala-azar Prevalence rate was not calculated because population denominator was not stable.

Conclusion

Visceral leishmaniasis was highly prevalent in the area. There was high kala-azar mortality rate and majority of deaths were unrecognized. Prevalence rate of VL-HIV co-infection and relapse was higher at MSF Abdurafi kalazar treatment center in West Armachiho district.

Recommendation

Ministry of health should strength prevention and control mechanisms of kala-azar to reduce prevalence of visceral leishmaniasis. Ministry of health and MSF Holland should conduct further studies for the cause of death among kalazar patients, because there may be drug toxicity or other complication.

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Chapter three- surveillance system evaluation

3.1. Surveillance System Evaluation of Malaria in Awi Zone, Amhara region, Ethiopia 2016

Abstract

Introduction

Public health surveillance is an ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve public health. In Ethiopia public health surveillance was implementing by different strategies, IDSR and PHEM. Public health surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness. Evaluation of a public health surveillance system focuses on how well the system operates to meet its purpose and objectives. Because there is no recent information about how surveillance system operated to the area, this evaluation is aimed to understand core and supportive activities of malaria surveillance system in Awi zone, Amhara region 2016.

Methods and materials

Qualitative and Cross-sectional descriptive study design was conducted on to evaluate malaria surveillance system. Our data source was zonal health department, district health office, health centers and health posts in Awi zone and conducted from May 20-June 5/2016 study period. The total sample size was one zonal department, three district health office, three health centers and three health posts with a total of 10 health facilities, which selected conveniently by their easy accessibility and high malaria case distribution.

Result

All participants responded that the surveillance system was helpful at Zone, district and health facility level to detect outbreaks of priority diseases early. In all visited health facilities 9 weekly reportable diseases were reported weekly and 13 immediately reportable diseases were also reported in immediately and weekly. From all facility that we observed zonal health department, all

district health office and all health centers has posted case definition for all national priority diseases. But all health posts (3) had no case definition for all national priority diseases. In 2016 among visited districts in Awi zone Ankasha district reported 100% in each week of the year where as Banja district reported 97% at four weeks in the year. Report completeness of Dangla Zuria district was 100% in all weeks in the year except in week 33 which was 97%. The health service coverage in Awi zone was 90% and 75% by health center and health post respectively.

In all visited health facilities health centers, health posts and district health offices that we have visited did not analysis data quarterly, monthly and annually by person time and place except zonal health department. Among visited district health offices, health centers and zonal health department all facilities had supervision plan, but did not conduct supervision to the lower level according to their plan except zonal health department. Timeliness of health centers in Dangla district, Ankasha district and Fagta Lekoma district were 99%, 87% and 100% respectively.

Conclusion

All visited health posts had no case definition for all national priority diseases. Data analysis was not conducted at all visited health facilities. The logistic and budget constraints were complained by all visited health facilities. There was poor supportive supervision of visited health facilities conducted to the lower level. Health service coverage by health post in Awi zone was poor. Report completeness hospital in Awi zone was low. Report timeliness of Ankasha district by health center was lower.

Recommendation

The district health offices and district administration should be allocated budget for emergency disease prevention and control activity. District health offices and health facilities should analyze surveillance data weekly, monthly and annually. Regional health bureau should strengthen Phem focal person at hospital to improve report completeness and timeliness. Awi zone and Amhara regional health bureau should expand and construct health post to improve health service coverage.

Key words; surveillance, Evaluation, Awi zone, Ethiopia,

Introduction

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health. It is carried out through a system which has legal support and extending from the central health authorities down to the peripheral health facilities and community level through sets of communication channels. These sets include upward and down ward reporting and feedback mechanism (1).

Data disseminated by a public health surveillance system can be used for immediate public health action, program planning, monitoring, evaluation and formulating research hypothesis. Public health surveillance system has been developed to address a range of public health needs (2).

In Ethiopia public health surveillance was implementing by different strategies. Previously it was started by vertically for each disease which was not efficient and effective. After this integrated disease surveillance and response (IDSR) strategy was introduced and implemented throughout the country. All regions of Health bureau were expected to report 23 selected diseases for federal ministry of health (FMOH) and, FMOH to world health organization. Currently the strategy and the system of public health surveillance changed due to newly emerging Business process reengineering. The system broadens to include any emergency beside to diseases outbreak and selected 21 diseases to surveillance in the country including maternal death. Regions were expected to report those diseases and any health and health related emergencies including region specific diseases. The task of surveillance has been authorized by health sectors and health workers at all levels (3, 4).

A malaria surveillance system consists of the tools, procedures, people and structures that generate information on malaria cases and deaths, which can be used for planning, monitoring and evaluating malaria control programs. An effective surveillance system enables programme managers to identify the areas or population groups most affected by malaria; Identify trends in cases and deaths that require additional intervention, e.g. epidemics; and assess the impact of control measures. With this information, programmes can direct resources to the populations most in need and respond to unusual trends, such as outbreaks of cases or the absence of a decrease in the number of cases despite widespread implementation of interventions. As a result, progress in malaria control can be accelerated and wastage of resources avoided (5). Malaria surveillance includes laboratory confirmation of presumptive diagnosis, finding out the source of infection and

identification of all cases and susceptible contacts and still others who are at risk in order to prevent further spread of the disease.

Ethiopia is one of the countries with unstable malaria transmission. Consequently, malaria epidemics are serious public health emergencies. In most situations, malaria epidemics develop over several weeks, allowing some lead-time to act proactively to avoid larger numbers of illnesses and to prevent transmission. Approximately 52 million people (68%) live malaria-endemic areas in Ethiopia, chiefly at altitudes below 2,000 meters.

The main malaria parasites are P. falciparum and P. vivax, accounting for 60% and 40% of all cases, respectively (6).

Malaria is ranked as the leading communicable disease in Ethiopia, accounting for about 30% of the overall Disability Adjusted Life Years lost. Approximately 68% of the total population of 84.3 million lives in areas at significant risk of malaria (7). According to the FMOH, in 2010/2011, malaria was the leading cause of outpatient visits, accounting for 15% of all visits, and health facility admissions, with 15% of all admissions. Malaria is one of the top ten causes of in-patient deaths among children less than five years of age and adults (8).

Rational of malaria surveillance evaluation

Public health surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness. Evaluation of a public health surveillance system focuses on how well the system operates to meet its purpose and objectives. The main purpose of malaria surveillance is to detect changes in trends or distribution in malaria in order to initiate investigative or control measures. It provides a basis for measuring the effectiveness of anti-malaria programme.

Malaria was highly prevalent among other weekly reportable diseases in Awi zone. Therefore this diseases have high public health problem to the area, it needs quality data collecting, analyzing, reporting and disseminating to the higher concerned body efficiently and effectively for decision making process. Because there is no recent information about how surveillance system could be conducted to the area, this report is aimed to understand the status of surveillance system in Awi zone from the zonal to selected district health office, health centers and health post level.

Objectives

General objectives

To evaluate core and supportive activities of malaria surveillance system in Awi zone, Amhara region, 2016

Specific objectives

- ✓ To assess case detection, reporting, analysis and response activities in Awi zone in 2016.
- ✓ To assess supervision, staff training, feedback, equipment and financial support in Awi zone in 2016.
- ✓ To evaluate different attributes of surveillance system in Awi zone in 2016.

Methods and Materials

Study area

The study area was Awi zone found in Amhara region with a total population of 1,220,316, of whom 1,020,889 were living in rural and 199,427 were living in urban. Awi zone has a total of 204 kebeles of which 23 were urban and 181 were rural. The zone has 4 hospitals, 43 health centers and 185 health posts.

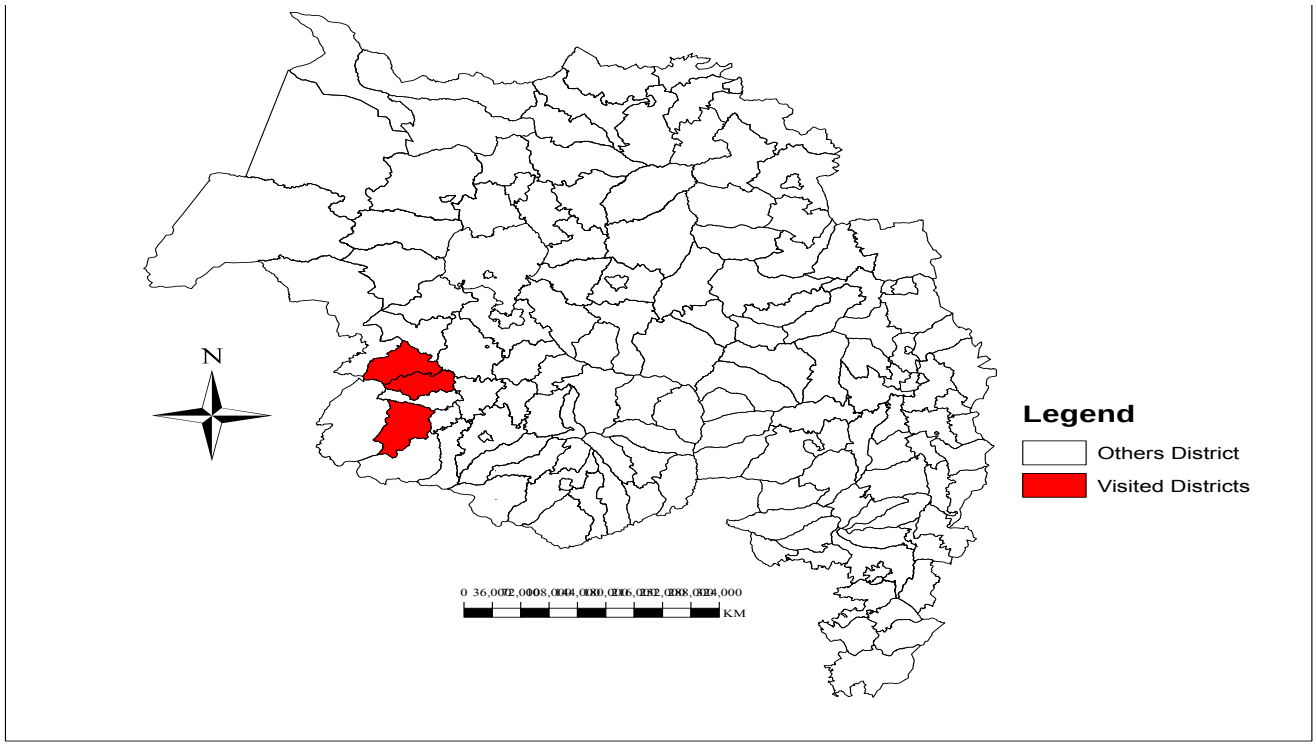


Figure 22: Map of Amhara region by district, Ethiopia, 2016

Data sources

Our data source was zonal health department, district health office, health centers and health posts in Awi zone.

Study period

The evaluation was conducted from May 20-June 5/2016 study period

Study design

Qualitative and Cross-sectional descriptive study design was conducted to evaluate malaria surveillance system.

Malaria suspected case definition: any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea, and vomiting diagnosed clinically as malaria.

Malaria confirmed case definition: A suspected case confirmed by microscopy or RDT for plasmodium parasites.

Sample size and sampling technique

The total sample size was one zonal health department, three district health offices, three health centers and three health posts with a total of 10 health facilities which selected conveniently by their easy accessibility and high malaria case distribution.

Operational definitions

Simplicity- Refer to both its structure and ease of operation
Sensitivity- Proportion of cases detect by the surveillance system or ability to detect outbreak.
Flexibility- A flexible public health surveillance system can adapt to changing information needs on operating conditions with little additional time, personnel or allocated funds.
Predictive value positive- Proportion of reported cases of diseased that really being the diseased.
Data quality- Reflect completeness and validity of the data from public health surveillance
Representativeness- Represent disease occurrence over time and distribution, these characteristic generally related to time, place, and person.
Acceptability- Willingness of persons and organizations to participate in the surveillance system
Timeliness- Reflect speed between steps in a public health surveillance system
Stability- Refer to reliability (ability to collect, manage, and provide data properly without failure) and availability (ability to be operational when needed) of the public health surveillance system

Data collection

The data was collected by direct face to face interviewing with malaria/PHEM officers, phem focal persons and health extension workers by principal investigators.

Data Analysis

After collecting and checking completeness of the data it was entered and analysis by excel spread sheet and manually. Repeated cross-checking were done to keep the quality of data before analysis.

Result

Target diseases under surveillance in PHEM

In the assessed zone, districts, health centers and health posts 22 priority disease were planned and reported weekly and immediately as the scheduled reporting date. At all reporting levels all 9 weekly

reportable diseases were reported weekly and 13 immediately reportable diseases were also reported immediately and weekly.

Table 18: Weekly and immediately reportable disease included in Awi zone, Ethiopia 2017

Immediately reportable disease	Weekly reportable disease
1. Yellow fever 2. Viral hemorrhagic fever (VHF), 3. Acute flaccid paralysis (AFP/polio), 4. Cholera, 5. Avian human Influenza (AHI), 6. Anthrax, 7. Rabies, 8. Measles, 9. Neonatal tetanus (NNT), 10. New human influenza (H1N1), 11. Guinea worm, 12. Sever acute respiratory syndrome (SARS), 13. Smallpox,	1. Relapsing fever, 2. Typhoid fever 3. Typhus, 4. Malnutrition 5. Dysentery, 6. Malaria, 7. Meningitis, 8. Leishmaniasis, 9. Maternal death

Level of usefulness

All participants responded that the surveillance system was helpful at Zone, district and health facility level to detect outbreaks of priority diseases early. They also responded that surveillance system 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 institutions giving health service. In all assessed health facilities the surveillance system had been recognized and understood as the base for controlling the public health emergencies.

Case detection and registration

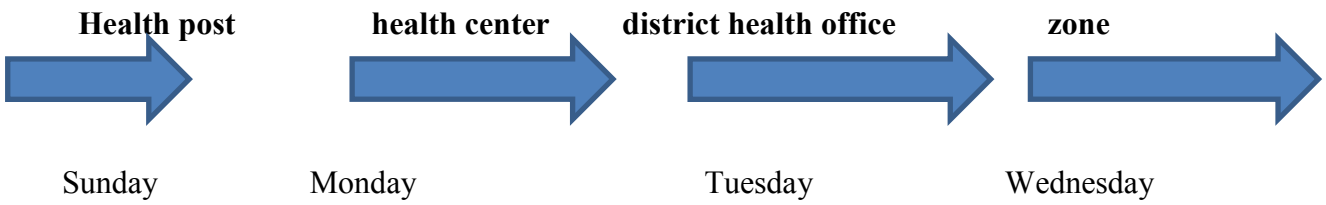
In visited health facilities all health centers used microscopy for malaria parasite detection where as health posts used rapid diagnostic test.

From all facility that we observed zonal health department, all district health offices and all health centers had posted case definition for all national priority diseases. But all health posts (3) did not post case definition for all national priority diseases.

Data reporting

During observation and interview recommended PHEM reporting forms were available at all times over the year 2008 without lack in all visited facilities. The reporting entities for the surveillance system were public health facilities (hospitals, health centers and health posts) and private for profit health facilities (medium, primary clinics). Before conducted one month of this surveillance system evaluation acute flaccid paralysis and measles case were reported within 1 up to 2 days of detection by Awi zone health department. Among all government health facilities in Awi zone, 91% were reported by using e-mail or telephone or fax. But in case of immediately report the zone could communicate with health center focal person, district officers and health extension workers by phone. Weekly reporting flow of health facility in Awi zone was scheduled as shown below.

Reporting level and days



Data analysis

Total population, male, female, and under five age group population denominators for data analysis were available and posted in all visited health facilities. But in all visited health facilities health centers, health post and district health offices that we have visited did not analysis data quarterly, monthly and annually by person time and place except zonal health department. But all data which was reported weekly and immediately were registered in all health centers, health posts and district health offices including zonal health department. Among visited health centers (3), districts (3) and zone, only zonal health department and abadra health center entered and compiled data by computer

but the rest used hard copy to entered and compiled data. All visited health posts, health centers and district health offices sent daily, weekly report to higher level by using telephone and hardcopy.

Epidemic detection and outbreak investigation

All visited health facilities used to norm chart for malaria epidemic detection. There was no malaria outbreak in Awi zone in 2008 EFY, but two outbreaks were occurred namely scabies and human influenza in Gugsa Shikuda and Jawi district respectively in Awi zone. Two of them were investigated, but only sample of human influenza patients were sent to regional laboratory investigation and it was confirmed. Scabies outbreak was started at 13/12/2016 and investigated at 15/02/2016 in Gugsa Shikuda district. Suspected case of human influenza was started on 28/02/2016 and investigated on 8/03/2016 in Jawi district. Among the total patient affected by scabies (257), 111 were male, 89 were female, and 57 were under five years‘ children, but death was not occurred. Among the total patients affected by human influenza (33), 13 were males, 15 were females and 5 were under five years of children, but death was not occurred.

Epidemic preparedness and response

In Awi zone all district health offices (11) had established rapid response team in 2016. At zonal level multi-sectorial emergency task force and rapid response team was established and conducted weekly regular meeting during outbreak in 2016. Among all visited district health offices (3), health centers (3) and zonal health department only one district health office, one health center (addiss kidam) and zonal health department had emergency preparedness plan. In all visited district health offices, health centers and zonal health department emergency management committee and rapid response team was established but there was no regular schedule for meeting. Except Ankasha district health office and zonal health department, budget was not allocated for emergency preparedness and response in all visited health centers and district health offices. In all visited health facilities in the zone there were no emergency stocks and supplies in 2016 for epidemic control. Zonal health department had respond for human influenza outbreak within 48 hours in 2016. All emergency task force and rapid response team in all visited health facilities did not evaluate their preparedness and response during the study year (2016).

Training, supervision and feed back

Among all districts (11) in Awi zone, eight of them had permanent assigned surveillance officers and all they were trained on surveillance. Among visited district health offices, health centers and zonal health department all facilities had supervision plan, but did not conduct supervision to the lower level according to their plan except zonal health department. Zonal health department did conduct supervision to district health offices for 3 times and 2 times for each health centers in the year 2016. In the year zonal health department was supervised by regional public health emergency management officers for one time but did not receive feedback from higher level supervisors. Zonal health department sent feedback to all 11 district health offices for four (4) times, but did not send to health centers and health posts in the year 2016. Zonal health department conducted active case surveillance in two district and four health centers which did get suspected AFP and scabies cases in the year 2016. Among visited district health offices (3), all had supervision plan and they could conduct supervision to health facilities. Ankasha district health office did conduct supervision to each health center and health post for three times in 2016, but this district did not send feed back to health centers and health posts. This district did not conduct active case surveillance in 2016. Dangla district health office conducted supervision to each health center four times and eight times for each health post ;and could send feedback to each health center two times in the year 2016, but this district received feedback from higher level officers four times in the year. Fagta lekoma district health office conducted supervision for every month to 6 health centers and 25 health posts in the year. This district health office conducted active case surveillance for twelve times at 6 health facilities in the year. Among visited health centers (3) there was no supervision feedback by higher level supervisors except Abadra health center that supervised and received only one times in a year.

Availability of Resources

Resources for data management (computer, printing, copy machine), communication (fax, wireless phone, internet), and logistics were all available at the Zonal level. However, they all became very scarce down in the lower level. The PHEM units at the district, and health facility level did not have communication ways; like fax machines and internet. The logistic and budget constraints were complained by all visited health facilities.

Surveillance attributes

Simplicity

All respondents in visited health facilities responded case definition for priority disease was easy for all levels of health professional for case detection. And also they responded that the surveillance system was allowed for all levels of health professionals to fill data and allow recording and reporting on time. Among seven respondents of health personnel 6 were responded that it took less than 15 minutes to fill the format at all levels and they responded that laboratory confirmation of malaria may took 15 -30 minutes.

Flexibility

Among seven respondents of health personnel all responded that the current reporting format included newly occurring disease without much difficulty and allowed to include new variables easily. All respondents told that the surveillance system was easy to integrate with other systems and easy to add new diseases on the report.

Acceptability

In all visited health facilities all respondents of health personnel did accept and well engaged to the surveillance activities. There were weekly and immediately report of priority diseases reported by visited facilities which evident for acceptance of surveillance activities by health personnel.

Completeness

In all visited health facility some variables were not filled such as blank variable like week number on some weekly report format. Also some immediately and weekly reportable diseases were left blank instead of filled zero at some reporting format in all visited health facilities.

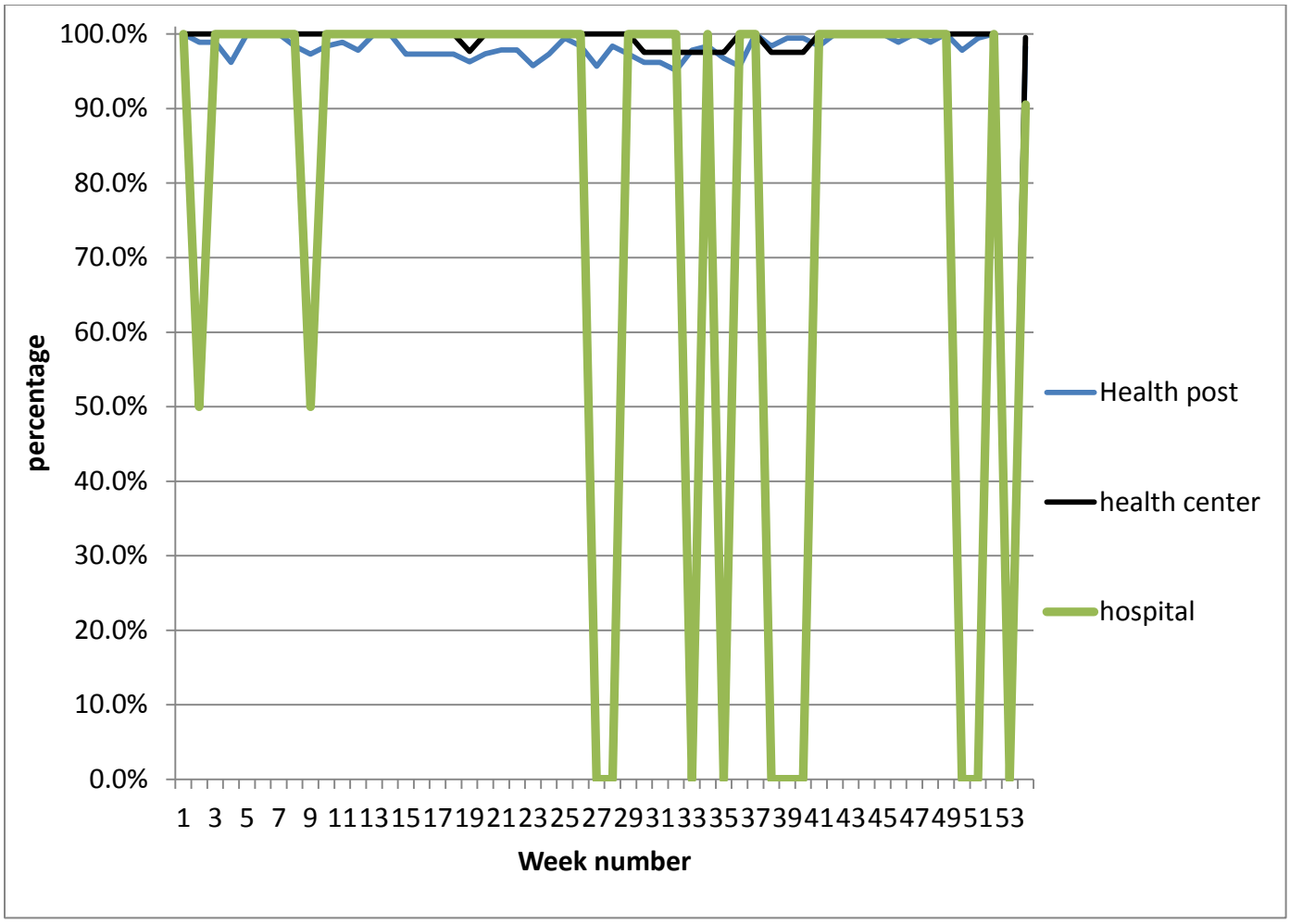


Figure 23: weekly report completeness by health facility in Awi zone, Amhara region, Ethiopia, 2016

Report completeness by district

In 2016 among visited districts in Awi zone Ankasha district reported 100% in each week of the year where as Banja district reported 97% at four weeks in the year. Report completeness of Dangla zuria district was 100% in all weeks in the year except in week 33 which was 97%.

Table 19: Weekly report completeness of visited districts in Awi zone, Amhara region, Ethiopia, 2016

	Name of district				Name of district		
week no	**Ankasha**	**Banja**	**Dangla Zuria**	**week no**	**Ankasha**	**Banja**	**Dangla Zuria**
1	100%	100%	100%	27	100%	100%	100%
2	100%	100%	100%	28	100%	97%	100%
3	100%	100%	100%	29	100%	97%	100%
4	100%	100%	100%	30	100%	100%	100%
5	100%	100%	100%	31	100%	100%	100%
6	100%	100%	100%	32	100%	100%	100%
7	100%	100%	100%	33	100%	97%	97%
8	100%	100%	100%	34	100%	100%	100%
9	100%	100%	100%	35	100%	100%	100%
10	100%	97%	100%	36	100%	100%	100%
11	100%	100%	100%	37	100%	100%	100%
12	100%	100%	100%	38	100%	100%	100%
13	100%	100%	100%	39	100%	100%	100%
14	100%	100%	100%	40	100%	100%	100%
15	100%	100%	100%	41	100%	100%	100%
16	100%	100%	100%	42	100%	100%	100%
17	100%	100%	100%	43	100%	100%	100%
18	100%	97%	100%	44	100%	100%	100%
19	100%	100%	100%	45	100%	100%	100%
20	100%	100%	100%	46	100%	100%	100%
21	100%	100%	100%	47	100%	100%	100%
22	100%	100%	100%	48	100%	100%	100%
23	100%	100%	100%	49	100%	100%	100%
24	100%	100%	100%	50	100%	100%	100%
25	100%	100%	100%	51	100%	100%	100%
26	100%	97%	100%	52	100%	100%	100%

Weekly report completeness by zone

The minimum phem weekly reporting completeness of Awi zone in 2016 was 95% during week 36, whereas the maximum was 100% during ten different weeks in the year. But the minimum weekly report completeness was higher than the expected minimum national requirement (80%).

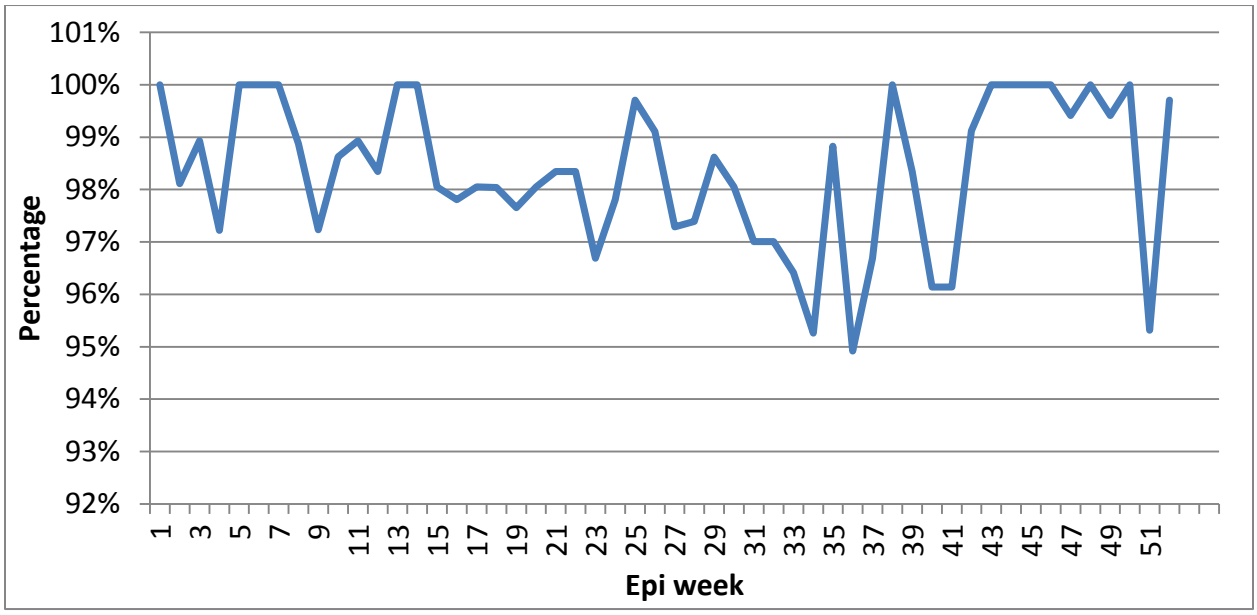


Figure 24: Phem weekly report completeness of Awi zone, Amhara region, Ethiopia, 2016

Malaria morbidity and health service coverage

In Awi zone malaria is prevalent throughout the year. In this zone a total of 1,220,316 people were at risk of malaria in 2016. The total malaria prevalence in Awi zone was 4.7%. Malaria accounted 9% of the total outpatient in Awi zone. Malaria prevalence was 2%, 1.5% and 6.8% in Ankasha, Fagta Lekoma and Dangla Zuria districts respectively.

Table 20: number of malaria tested and cases in assessed health facilities in Awi zone, Amhara region Ethiopia, 2016

Name of health facilities	Total malaria	P .falciparum	P .vivax	Malaria outpatient	Total outpatient	Total tested
Awi zone	57045	26821	30218	56901	625123	227361
Ankasha district	4894	3394	1816	4893	78008	20563
Fagta Lekoma District	2316	1324	1140	2315	38449	8030
Dangla district	2393	1078	1767	2393	61999	19811

All areas in the zone are under surveillance for all national priority diseases and also the surveillance system covered both urban and rural population. Health service coverage by health center were 90%, 90%, 100% and 100% in Awi zone, Ankasha district, Fagta lekoma district and Dangla district respectively. Health service coverage in Awi zone by health post was 75%.

Table 21: Number of health facilities and health service coverage in Awi zone and assessed district, Amhara region, Ethiopia, 2016

Health Facilities	Population		Health center		Health post	
	Urban	Rural	Number	Coverage	Number	Coverage
Awi zone	199,427	1,020,889	43	90%	185	75%
Ankasha district	25,411	203,696	8	90%	31	69%
Fagta Lekoma District	14,671	142,000	6	100%	25	81%
Dangla district	31,826	3,546	5	>100%	27	>100%

Representativeness

The health service coverage in Awi zone was 90% and 75% by health center and health post respectively. All visited health facilities planned to target both urban and rural kebeles for surveillance. They also planned and followed health and health related events in the whole community of urban and rural by the surveillance. But all responded that the surveillance reporting format did not include the whole socio demographic variables like ethnic group and religion.

Predictive value positive

Predictive values positive for malaria case definition confirmed with RDT and microscopy was 38 % (27,202/72177) and 19 %(31,037/159792) respectively in Awi zone.

Stability

Most health professionals responded that the surveillance system was interrupted due to lack of budget, but it was solved by integrated with other programme in the health system. In all health facilities there were surveillance officers or focal persons in PHEM unit.

Timeliness

The annual timeliness of weekly PHEM report in Awi zone was 98%, 99.5% and 90.5% by health posts, health centers and hospitals respectively. Report timeliness of health centers in Dangla district, Ankasha district and Fagta Lekoma district were 99%, 87% and 100% respectively, but completeness were 100% in all visited district health offices. Timeliness of health posts in Ankasha and Fagta Lekoma district were 88% and 99% respectively.

Discussion

Among the total OPD visit malaria was account 9%, 6.3%, 4% and 6% in Awi zone, Ankasha, Dangla zuria and Fagta Lekoma districts respectively. The minimum weekly report completeness of Awi zone was higher than the expected minimum national requirement (80%). Report completeness of hospitals in Awi zone had 79% which was lower than the expected minimum national report completeness (80%). Report timelines in visited health centers, health posts and district health offices were higher than the national target of minimum report timelines (80%).

Health service coverage were 90% and 69% by health center and health post respectively in Ankasha district, which was lower than the national target of one health center for 25, 000 and one health post for 5,000 population. Health service coverage by health center was 100% in Fagta Lekoma district, which was similar with the national target of one health center for 25, 000 population. But health service coverage by health post was 81%, which was lower than the national target of one health post for 5,000 populations. In Dangla district health service coverage was 100% by health centers and health posts, which was similar with the national target of health service coverage by health centers health and health posts.

Total malaria prevalence in Awi zone (2016) was 4.8% with age specific attack rate of 5%, 3% and 6% in the age category of < 5years, 5-15 years and ≥15 years respectively. The total parasite prevalence in this study was (4.8%) 3.2% due to falciparum and 1.5% due to P.vivax which was higher than the prevalence of malaria parasitemia studied by Malaria Indicator Survey (MIS), in 2011, which was approximately one percent (7).P. falciparum was account 67% of the total cases, higher than The FMOH reported a total of 3,384,589 malaria cases from July 2011-June 2012, with 1,793,832 (53.0%) of these laboratory confirmed, with 1,061,242 (59.2%) P. falciparum; but P.vivax in Awi zone was lower than 732,590 (40.8%) P.vivax reported by FMOH 2012.

Parasite prevalence in Awi zone showed that 1.6% and 0.9% for falciparum and P.vivax respectively which was higher than Malaria Indicator Survey2007 (MIS) which indicated that parasite prevalence (as measured by microscopy) in Ethiopia was 0.7% and 0.3%, respectively for P. falciparum and P. vivax below 2,000 meters altitude(7). According to this study Awi zone malaria prevalence was 2.2% and 2.5% with microscopy and RDT respectively, which was higher than 2015 MIS, showed that malaria prevalence was 0.5 percent and 1.2 percent by microscopy and RDT, respectively (9).

From the total positivity (37.7%) by RDT 27.2% and 10.5% was due to p. falciparum and P.vivax respectively which was higher than the overall MIS 2010, 134/6,815 (2.0%) surveyed individuals tested positive for Plasmodium infection by RDTs, with 1.8% and 0.2% due to P. falciparum and P. vivax, respectively (10).Among the total malaria cases admission rate by malaria in Awi zone was0.3 %(151/59010). Malaria death rate in Awi zone was 0.05 per 1000 population in 2016(3/59010), but no death was recorded in assessed districts.

The 2011 MIS showed that 1.3% of all age groups were positive for malaria using microscopy and 4.5% were positive for malaria using RDTs below 2,000 meters. P. falciparum constituted 77% of these infections.

RDT result of parasitemia prevalence in Awi zone was 2.2% with 1.6%p. falciparum and0.6 P.vivax , which was lower than the MIS surveyed(2011) RDT result which revealed that malaria prevalence was 4.5% in malaria-endemic areas <2,000m. Of the total RDT-positive cases, 1.9% was positive for P. falciparum only, 1.4% for P. falciparum or mixed and 1.1% for P. vivax/P.malare/P.ovale. The highest proportion of RDT-positive malaria cases was found in age group 10–19 (5.5%) and the lowest in age group 70–79 (1.1%) (8).

Conclusion

All visited health posts had no case definition for all national priority diseases. Data analysis was not conducted at all visited health facilities by time place and person. Regular meeting was not conducted by emergency response committee at all levels. Emergency preparedness and response budget was not allocated. There was poor supportive supervision given by district health offices and health centers to the lower level. Health service coverage by health post in Awi zone was low. Hospital report completeness in Awi zone was the least. Report timeliness of Ankasha district by health center was lower.

Recommendation

Emergency preparedness and response committee should strength and conduct regular meeting at all levels. The district health offices and district administration should be allocated budget for emergency disease prevention and control activity. Awi zone and Amhara regional health bureau should expand and construct health post to improve health service coverage. District health offices and health facilities should analyze surveillance data weekly, monthly and annually. Regional health bureau should strength Phem focal person at hospital to improve report completeness and timeliness.

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Chapter four- Health profile description report

4.1. Health Profile Description Report of Mirab Armachiho District, Amhara Region, Ethiopia, 2016

Abstract

Background

Health Profiles is a programme to improve availability and accessibility for health and health-related information in the area. The profiles give a snapshot overview of health for each local authority in the area.

It designed to help local government and health services make decisions and plans to improve local people's health and reduce health inequalities; the profiles present a set of health indicators that show how the area compares to the national average by the indicators that are carefully selected to reflect important public health topics. This report helps to assess major health and health related problems, health services and health service utilization rates and to calculate health indicators in the area.

Methods

The study area was West Armachiho district, which is found in north Gondar zone of Amhara regional state. The area was selected by non-probabilistic purposive sampling method. The data sources were district health office, district water development office, district agricultural development office, district finance and economy development office and district education office of west Armachiho district. The data was collected from February 07-19 /2016 by face to face interviewing methods using standard tool checklist. After cleaning and checking the completeness the data was entered and analyzed by using Microsoft excel spread sheet.

Results

There were 100% coverage of first ante natal care (ANC1) (1840/1525), 80% fourth ante natal care coverage (ANC4) (1217/1525) and 97.7% PMTCT coverage (1490/1525). There was >100% total contraceptive coverage (8332/8240). There was 18.7% coverage of long term family planning

(973/4120). Coverage of TT2+ for pregnant and non-pregnant women was 89.7% and 14.5% respectively. Skilled delivery attendant coverage was 64 %(978/1525). Of the total targeted under one age children (1525) for immunization 92%, 106.3%, 106.7% and 101.6% were vaccinated for BCG, penta1, penta3 and measles respectively in 2015. There was 100% coverage of TB screening among OPD visits**.** In 2014/2015 there were 57 new bacteriologically confirmed TB cases. A total of 248 people were detected for all form of TB and 52 TB suspected person were detected for pulmonary tuberculosis.

Conclusion and recommendation

According to 2015 morbidity data in above 5 years age group malaria was the first prioritized public health problem in the area followed by acute febrile illness, but in under- 5 age group acute febrile illnesses was the first leading cause of morbidity followed by non-bloody diarrhea. The prevalence of MDR TB was also another challenged public health problem to the area. Prevention and control methods of malaria should be strengthened to reduce morbidity and mortality of the disease. Hygiene sanitation practice and maternal counsel about how to care for their children should be strengthened to prevent diarrheal diseases. Due to high temperature of the area vaccine cold chain system must be strengthened to attain vaccine potency. The government and non-governmental organization should be strongly support the district to prevent and control MDR TB successfully.

Key words; Health profile, West Armachiho, Ethiopia

Introduction

Health Profiles is a programme to improve availability and accessibility for health and health-related information in the area. The profiles give a snapshot overview of health for each local authority in the area. It provides summary health information to support local authority members, officers and community partners to lead for health improvement **(1).**

It designed to help local government and health services make decisions and plans to improve local people's health and reduce health inequalities, the profiles present a set of health indicators that show how the area compares to the national average by the indicators that are carefully selected to reflect important public health topics(2).

The major health problems of the country remain largely preventable communicable diseases and nutritional disorders. Despite major progresses made to improve the health status of the population in the last one and half decades, Ethiopians still face a high rate of morbidity and mortality and the health status remains relatively poor. More than 90% of child deaths are due to pneumonia, diarrhea, malaria, neonatal problems, malnutrition and HIV/AIDS, and often a combination of these conditions.

Therefore this report is aimed to identify the gap of health services and prioritized public health problems of the area under studied. It also suggests possible solutions of the identified public health problems and recommends future research areas.

Statement of the problem

Most daily laborers migrate to the area were male adults, and they were affected by malaria than any other age groups in the area. About 75% of the land and 60% of the population is exposed to malaria in Ethiopia. Ethiopia is generally considered as a low- to- moderate malaria transmission intensity country. However, the health sector in Ethiopia is greatly affected by climate change which has profound consequences on the transmission cycles of vector-borne infectious diseases like malaria. Due to the unstable and seasonal transmission of malaria in the country, protective immunity of the population is generally low and all age groups are at risk. Prevalence of malaria is currently estimated to be 1.3% (3).

Multi drug resistant tuberculosis was also challenged health problems for the area, and extensive drug resistance tuberculosis was also found in the area. The first Drug Resistance Survey, conducted between 2003 and 2006 showed that multi-drug resistance to TB drugs (MDR-TB) is present in 11.8% of previously treated cases and 1.6% of newly diagnosed TB cases, with an estimated 5,200 cases annually. The program's capacity to treat MDR-TB patients is limited to two referral hospitals in Addis Ababa (St Peter & ALERT) and one in Gondar (Gondar University Hospital). At the end of February 2012, a total of 424 cases of MDR-TB patients were enrolled on treatment. The routine MDR-TB surveillance system to detect MDR-TB suspects for early diagnosis and treatment is not yet fully formed. The second National Drug Resistance Survey is currently ongoing and a result was available in 2014(4).

Rational of the study

West Armachiho is one of hotspot districts in Amhara region and malaria was highly prevalent throughout the year in the area. Estimated of 300,000- 500,000 migrant populations were going to the area for daily laborer as a result it is prone to epidemic disease. Health profile data was not available before in the district, as such I am interested to collect and conduct this study at West Armachiho district.

Objectives

General objective

To assess major health and health related problems, health services and health service utilization at West Armachiho district in 2015

Specific objective

To understand health status of the population in West Armachiho district in 2015

To describe health service coverage and utilization in West Armachiho district in 2015

To identify prioritizing public health problems in West Armachiho district in 2015

To compare and discus main health service findings in West Armachiho district in 2015

Methods and Materials

Study area and population

The study area was West Armachiho district, which is found 215 Km far from Gondar and 400 km from Bahir Dar, city Amhara region. According to the data from district health office 300,000-500,000 estimated temporary migrant workers were come to the area in each year. In the area 45,257 populations were found in 2015, of which 23,084(51%) were males and 22,173 were females.

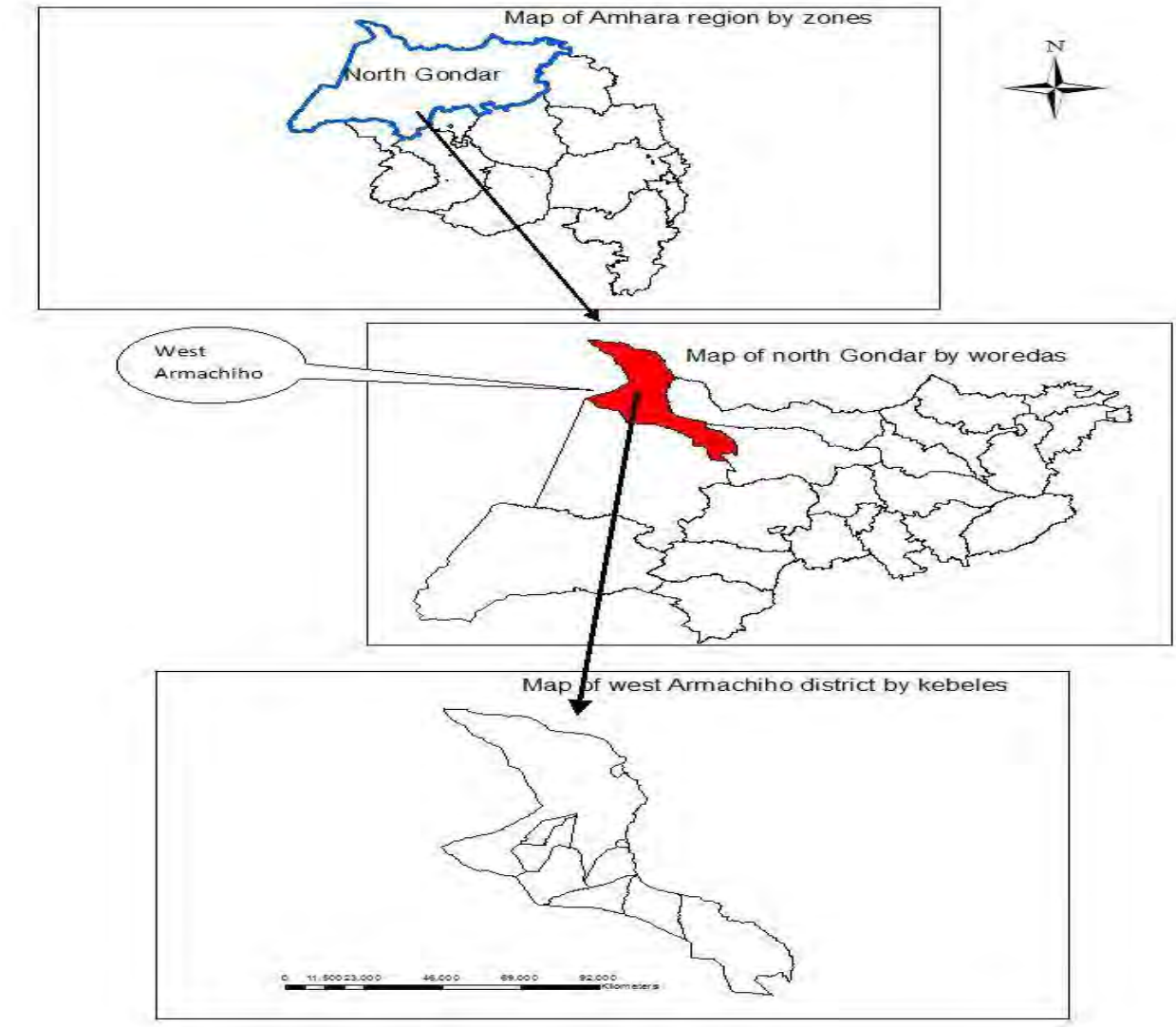

Figure 25: Map of Health profile description site West Armachiho district, North Gondar zone, Amhara, Ethiopia, 2015

Sampling and sampling procedure

The area was selected by non-probabilistic purposive sampling method due to highest malaria, TB and kalazar prevalence in the district.

Data sources

The data sources were district health office, district water development office, district agricultural development office, district finance and economy development office and district education office of west Armachiho district.

Data collection materials and instruments

We collected data by face to face interview methods with assigned individuals of the district offices from February 07-19 /2016 by using standard tool checklist.

Data analysis

After cleaning and checking completeness the data was entered and analyzed by using Microsoft excel spread sheet and manually.

Results

Historical back ground

Before 1998 Tsegedie, Tach Armachiho and lay Armachiho were one district called Tach Armachiho with a town of Sanja. But after 1998 all three districts were separated independently as a district. West Armachiho was formed in 1998 with the name of a town called Abrhajira. But after 2014 the district was separated into two districts, one city administrative of Abdu Rafi and West Armachiho.

Geography and Climate

The town Abrhajira is found at a distance of 215 Km from zonal town of Gondar, 400 Km from Bihar Dar, capital city of Amhara and 947 Km from Addis Ababa, which is capital city of Ethiopia. It is neighboring with Tigray in the north, Metema in the west, Tach Armachiho in the south and Tsegedie in the east. It has an area of 2557. 09 KM square with totally kola climatic zone. Annual range of temperature in the area was from 34 to 48 degree centigrade. The land is fertile, and 730

agricultural investors were participated in sesame production and other crops. The district has got 6oo to 1100 mm average annual rain fall. It is found between 500-750mmHg above sea level.

Political and Administration

West Armachiho district has 10 rural kebeles and 4 urban kebeles, with a total of 14 kebeles. WHO, UNICEF, ICAP, MSF, MSH hill TB were main supporting organizations to the district. Currently the district separated into two, one city administration of Abdu Rafi and West Armachiho, with a town of Abrhajira.

Population and population structures

The 2015 national estimated total population in the district was 45257 of which 17124(37.8%) lives in rural and the rest 28133(62.2) lives in urban. From the total population, 23084(51%) were males and 22173(49%) were females. Among the total population 6128(13.5%) were under the age of five years. The ethnic group who lived in the area was Amhara, Tigrian, Oromo, and others. According to MSF estimation 300,000-500,000 migrant workers came into the area per year.

Table 22: Total population distribution by kebeles west Armachiho, Amhara, Ethiopia, 2015

Ser.no.	name of kebeles	Total population
1	Abdu Rafi 01	7966
2	Abdu Rafi 02	11782
3	Abrhajira o1	4264
4	Abrhajira 02	4111
5	Corhumer 01	1609
6	Corhumer 02	1708
7	Zemene merik 01	869
8	Zemene merik 02	1232
9	Grarwuha	1839
10	Dermaga	1354
11	Mogessie	883
12	Meharsh	1348
13	Torka Enzelish	2959
14	Gabla	3333

	Total	45257

Table 23: Distribution of population groups West Armachiho, Amhara, Ethiopia, 2015

Age group (in years)	Total population
Infant at 1 year of age	1407
Children <3 years age group	3539
Children <5 year age group	6110
24-59 months	3842
Women in reproductive age(15-49)	10672
< 15 age group	19293
15-24 age group	9364
15-59 age group	23272
Non pregnant women in fertile age	9156
House hold size	1946
Women of age 30-49	8689

Economy

The main income of the district was agricultural production of sesame, cotton and crops. Some of the populations are participated in trading and raising animal. Average sesame and crop production in the area per hector was 5 and 8 quintal respectively.

Education

In the district there were 20 primary schools with a total of 10219 students, of which 3 were 1-4 grades with a total of 7366 students, and 17 were 5-8 grades with a total of 2853. There were three secondary schools with a total of 885 students, of which 2 were 9-10 grades with a total of 656 students, and 1 was 11-12 grades with a total of 229 students. From the total schools 2 were with water supply, 4 with functional latrines and 21 schools with anti HIV and other health clubs. From the total of 20 primary school students there were 3.3% dropout rates, of which 57.6% were 1-4 grades, and from the total of 3 secondary schools there were 4.2% school dropout rate, of which

94.6% were 9-10 grades. From the total primary school dropout rate 48.7% were female students, and from the total secondary school dropout rate 43.2% were female students.

Infrastructure and facility

The district town, Abrhajira; and town administrative Abdu Rafi had mobile based telephone and commercial bank of Ethiopia facilities. All kebeles in the district were accessible for motor vehicle during winter season, but three kebeles were difficult accessible for motor vehicle during summer season. The district town and all other kebeles except Abdu Rafi did not have wireless telephone service and 24 hour electric power supply. All kebeles except three (with 45, 50 and 67 KM) are found within a radius of 30 KM distance from the town of Abrhajira.

Vital Statistics

There were no recorded data about infant mortality rate, crude birth rate, crude death rate, neonatal mortality rate, child mortality rate and maternal mortality rate in the district.

Disaster and outbreak status

There was no history of disaster occurrence in the area. But there was history of cholera outbreak occurrence in the area during the year 2007; no data were available about the morbidity and mortality rate of the outbreak in the area. And also there was measles outbreak occurrence in the year 2015 in which 243 people were affected.

Endemic disease

Malaria

Malaria is prevalent throughout the year in the district. All kebeles in the district are malarious. Among the total tested of 68,655 there were 30, 424 positives, of these 20,870(68.6%) were plasmodium falciparum positive and 9,554(31.4%) were plasmodium vivax positive. There was 44.3 attack rate of malaria in the district. The highest and the least malaria positivity rate was 61% and 15% in November and June respectively, and the same was true for malaria number of cases in the district.

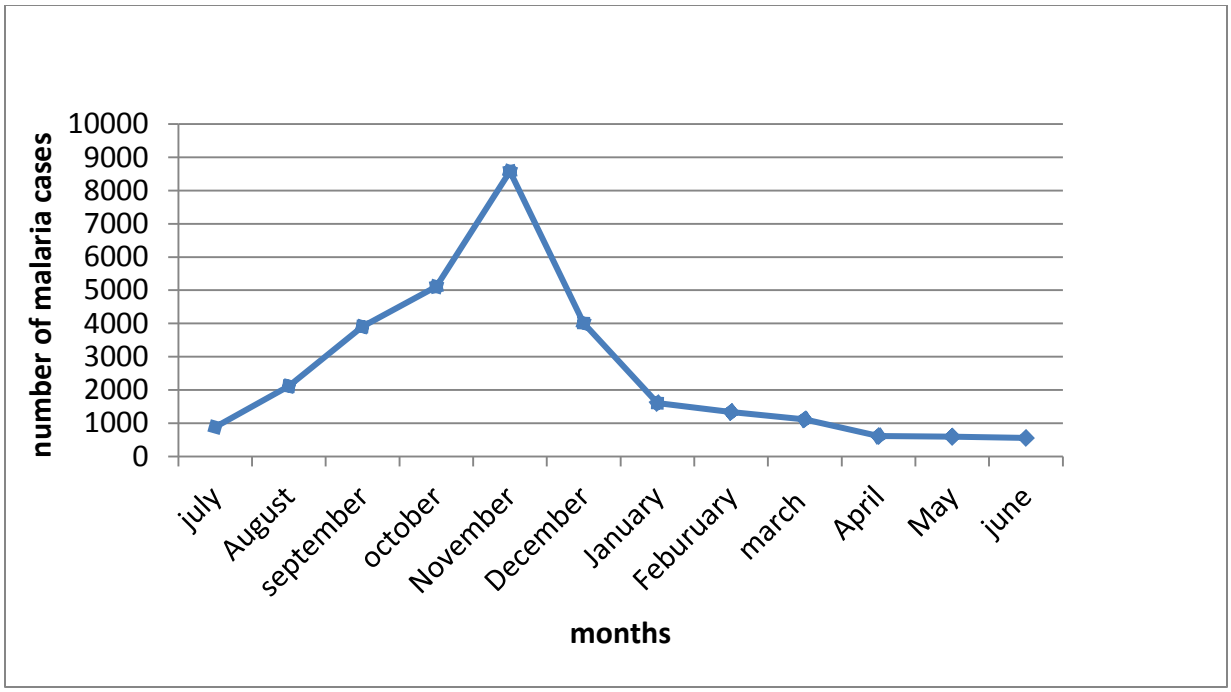

Figure 26: Monthly malaria cases in West Armachiho district, Amhara, Ethiopia, 2015

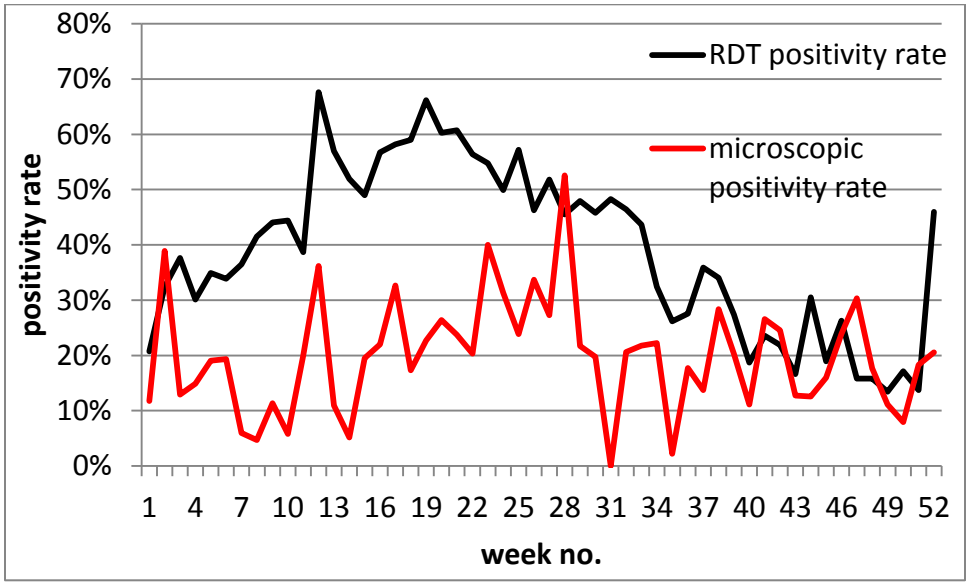

Figure 27: Microscopy and RDT malaria positivity rate in West Armachiho district, Amhara, Ethiopia, 2015

Among the total 30,424 malaria cases in the district, 1432 cases were under five age ,4025 cases were in the age range of 5 to 14 years and 24,705 cases were in above 15 years age group. In all

weeks of the year proportion of malaria cases in the district was higher in >15 age groups except week 34.

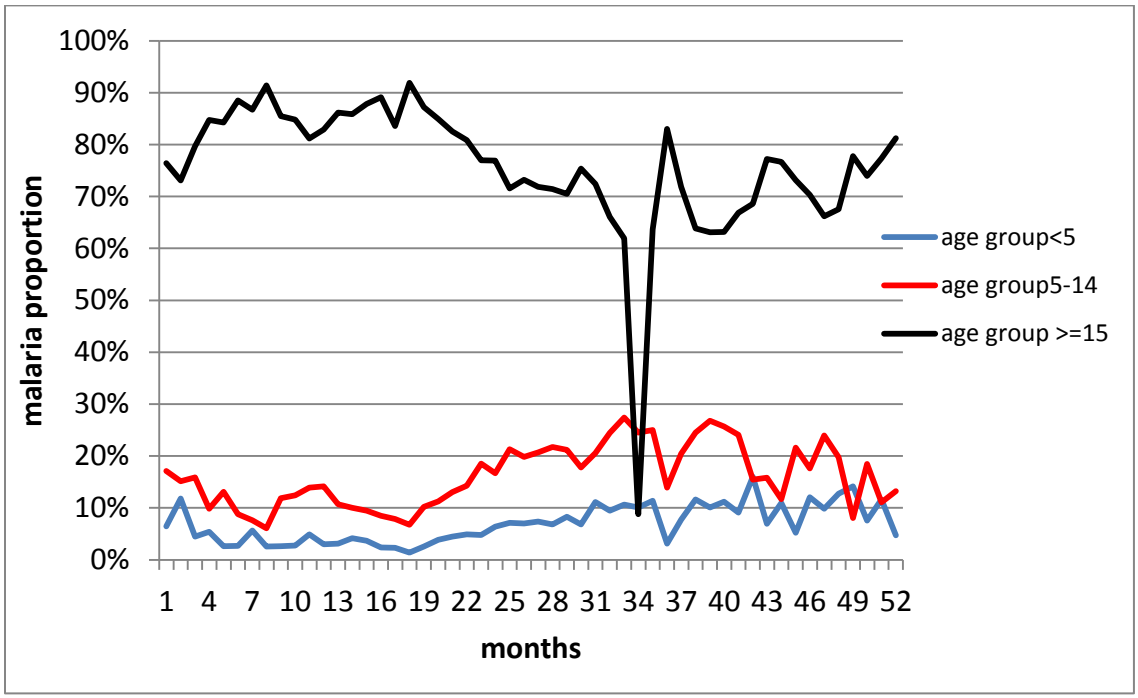

Figure 28: weekly malaria age proportion West Armachiho, Amhara, Ethiopia, 2015

Both species p. falciparum and p. vivax cases were highest in November and the least was in June. Except April and March falciparum was dominated than p. vivax in all months in the year.

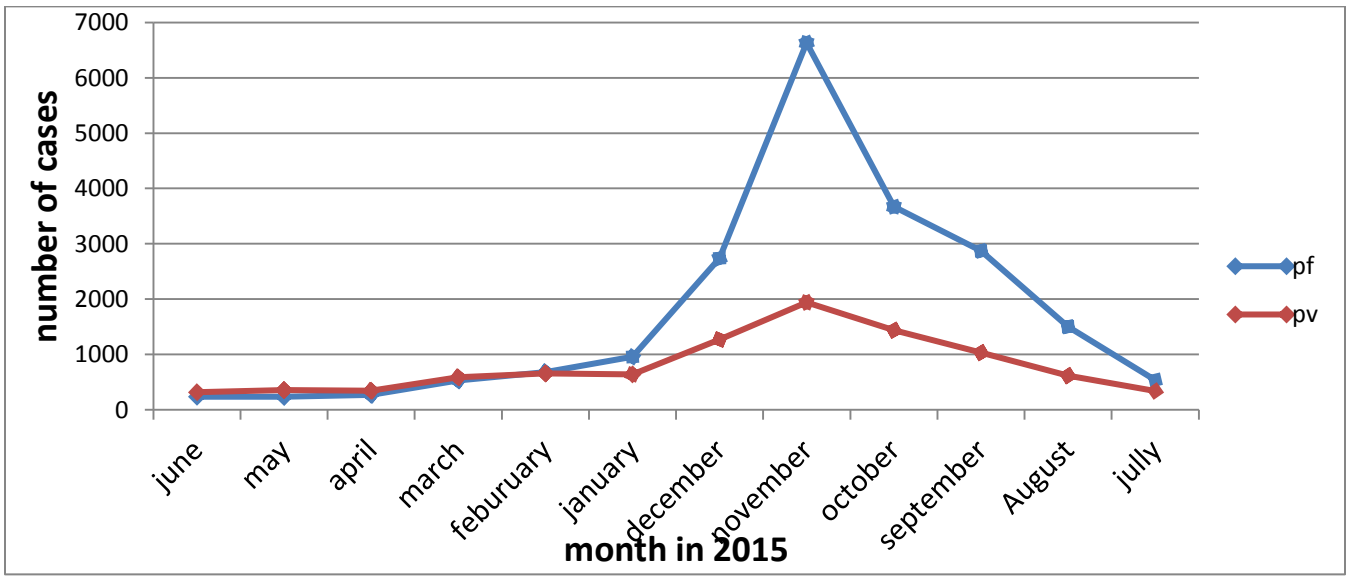

Figure 29: Monthly malaria cases by species west Armachiho, Amhara, Ethiopia, 2015

Tuberculosis

In 2015, 14 people were developed multidrug resistance tuberculosis in the area, of which 5 were on treatment, 2 were cured, 1 was defaulter and 5 were died. From the total MDR TB deaths (5), 1 case were developed X-DR TB (8.3%).

There was 100% coverage of TB screening among OPD visits**.** In 2014/2015 there were 57 new bacteriologically confirmed TB cases. A total of 248 people were detected for all form of TB and 52 TB suspected person were detected for pulmonary tuberculosis. There was 86% of TB cured rate and 90% treatment success rate in 2014/2015. All tuberculosis patients were tested for HIV. 41% of tuberculosis close contact person were screened for tuberculosis.

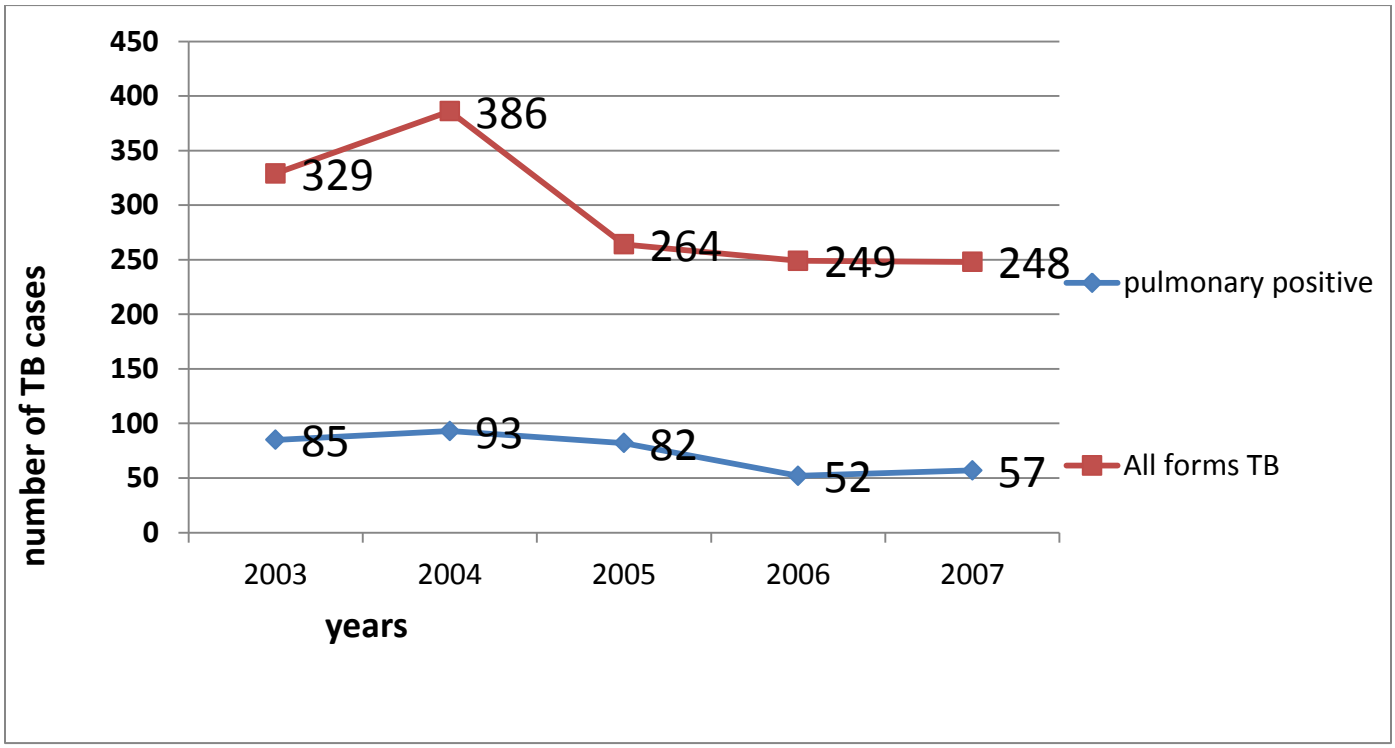

Figure 30: Trend of confirmed TB cases in West Armachiho district, Amhara region, Ethiopia, 2011-2015

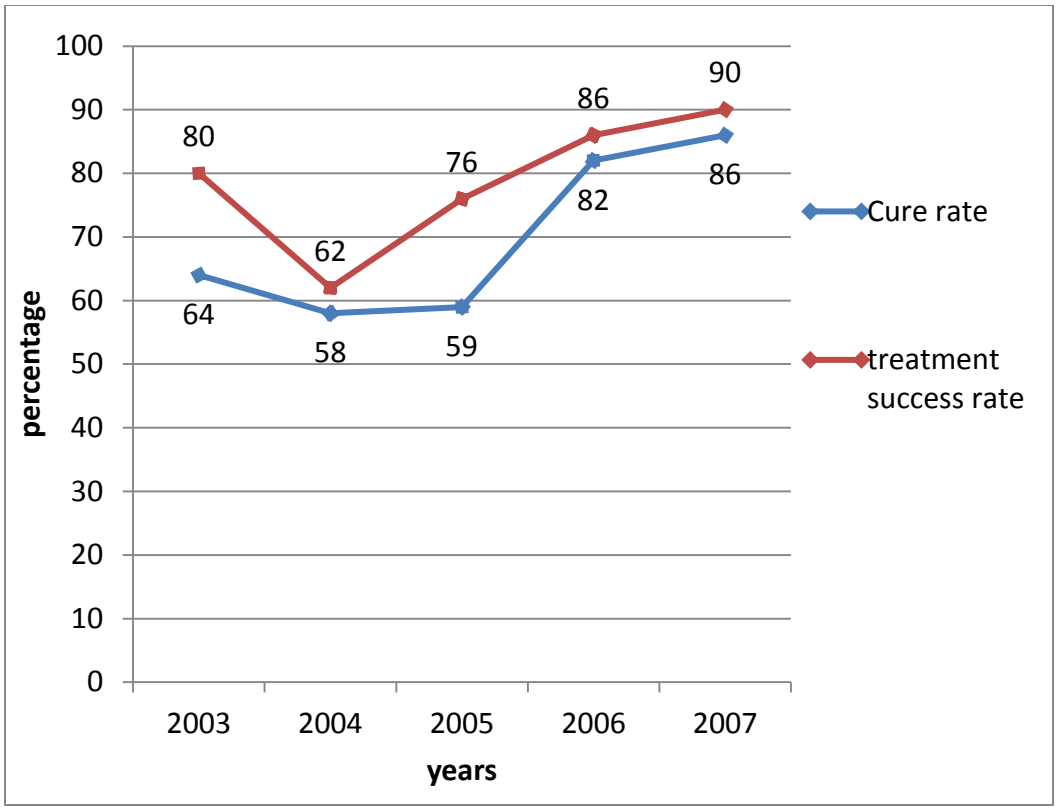

Figure 31: Treatment cure rate and treatment success rate of TB in West Armachiho district, Amhara region, Ethiopia, 2015

HIV/AIDS

In 2014/2015, 4384 people were tested for HIV by voluntary counseling and testing, 1256 people were tested for HIV by provider initiative counseling and testing. A total of 153 people were positive for HIV. There were two health centers which provided anti-retroviral therapy service (ART). A total of 1278 people were currently on ART.

Leading cause of OPD visit- malaria was the leading cause of morbidity in the district from the top ten diseases of OPD visits. Acute febrile illness and upper respiratory tract infection were the second and the third causes of morbidity among OPD visits in the district. AFI, non- bloody diarrhea and malaria were the first, the second and the third leading cases of morbidity diseases among OPD visits in under-five children respectively.

Table 24: Top ten diseases leading causes of morbidity among OPD visit in above 5 years West Armachiho district, Amhara region, Ethiopia 2015

Disease type	cases	
	number	percentage
malaria	44922	41.72
AFI	25850	37.85
URTI	3535	5.18
Dyspepsia	2687	3.93
Helmenthiasis	1893	2.77
Pneumonia	1699	2.49
Non bloody diarrhea	1538	2.25
Trauma	1433	2.1
Dysentery	1168	1.71
Total	84725	100%

Table 25: Top ten diseases leading causes of morbidity among OPD visit in under 5 years West Armachiho district, Amhara region, Ethiopia 2015

disease	number	Percentage (%)
AFI	3931	35.14
Non bloody Diarrhea	2248	20.1
Malaria	1546	13.82
Pneumonia	942	8.42
URTI	911	8.14
Helmenthiasis	575	5.14
Skin infection	416	3.72
Dysentery	345	3.08
Diarrhea with dehydration	272	2.43
Total	111861	100

District health system

The district health system was organized in to six case teams with secretary and district health office head as shown in the figure below.

Organ gram of West Armachiho district health office

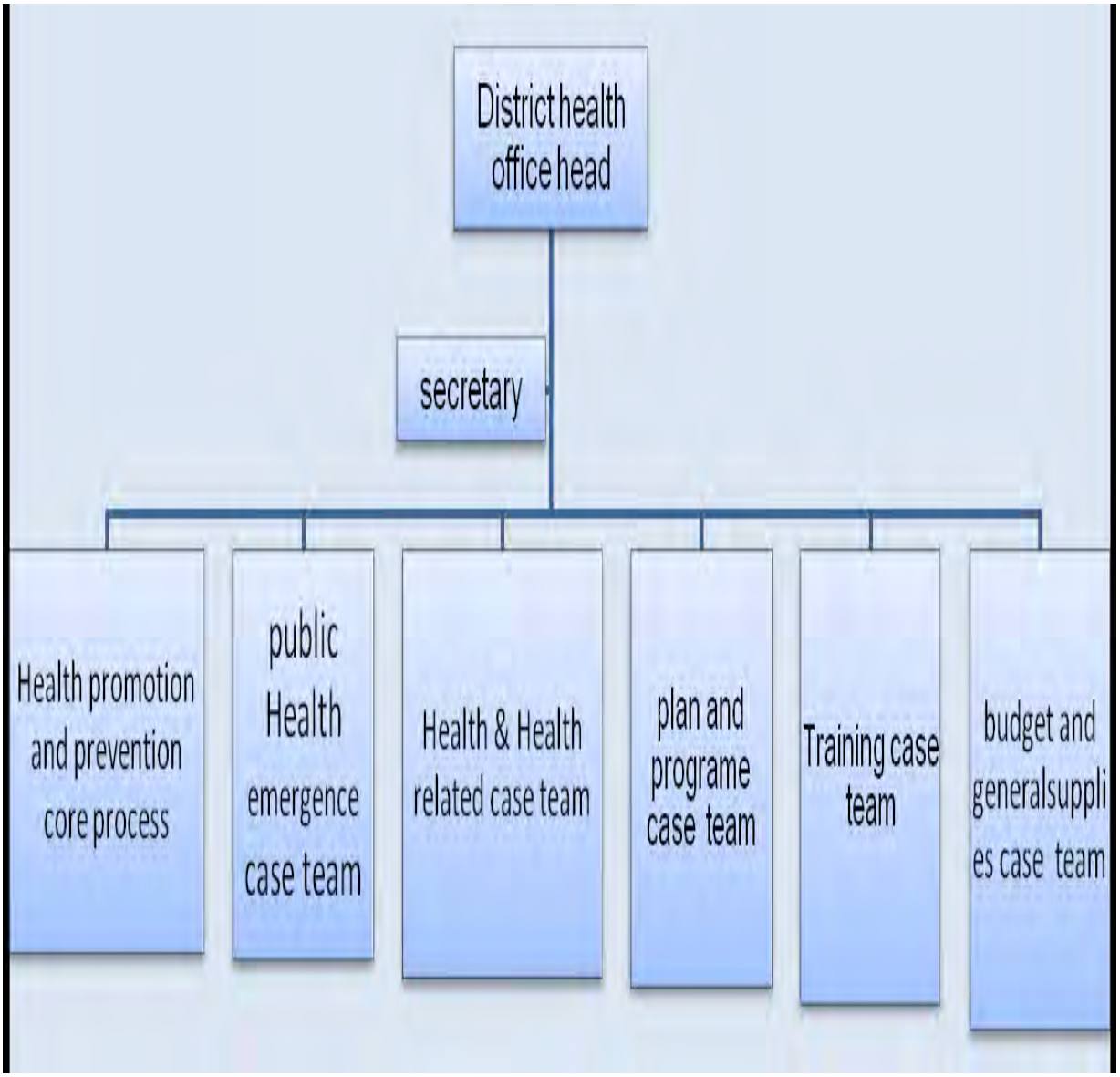

Figure 32: Health Organ gram of West Armachiho district, Amhara, Ethiopia, 2015

Health facility and health professionals

In the district there were 15 governmental health facilities (11 health posts, 3 health centers and 1 new building hospital) and 32 private health facilities (28 private clinic and 4 drug stores). Totally there were 107 health professionals, of which 7 health officers, 6 laboratory

technicians/technologists, 8 pharmacy technicians/pharmacists, 2 sanitarian, 8 midwiferies, 32 health extension workers and 44 nurses in the district. The district has 100% health service coverage by health center and health post.

Table 26: Type and number of health professionals in West Armachiho district, Amhara region, Ethiopia, 2015

category	male	female	total
Health officer	6	1	7
Laboratory technician/technologist	4	2	6
Pharmacy technician/pharmacist	8	0	8
nurses	16	28	44
midwifes	4	4	8
sanitarian	2	0	2
HEWs	0	32	32
total	40	67	107

Health Service Coverage and Utilization

Maternal health services

One of the eight primary health care elements, maternal and child health services were given high attention from the national to the district health service. In 2015 report there were 100% coverage of first ante natal care (ANC1) (1840/1525), 80% fourth ante natal care coverage (ANC4) (1217/1525) and 97.7% PMTCT coverage (1490/1525). There were 100% and 18.7% coverage of total contraceptive (8332/8240) and long term family planning respectively. Coverage of TT2+ for pregnant and non-pregnant women was 89.7% and 14.5% respectively. Skilled delivery attendant was 64 %(978/1525) coverage in the district.

Table 27: Coverage of ANC1, skilled birth attendant, PAB, PMTCT $ long term family planning in West Armachiho district, Amhara region, Ethiopia, 2015

Name of health facilities(HC)	ANC1 coverage (%)	Skilled delivery attendant coverage (%)	Long-term family planning (%)	PAB coverage (%)	PMTCT coverage (%)
Abrhajira	124.6	73.8	22	95.2	92.6
Abdurafi	110.9	73.2	17	70.5	60.2
Gabla	113	32.8	14.4	41.8	58.8

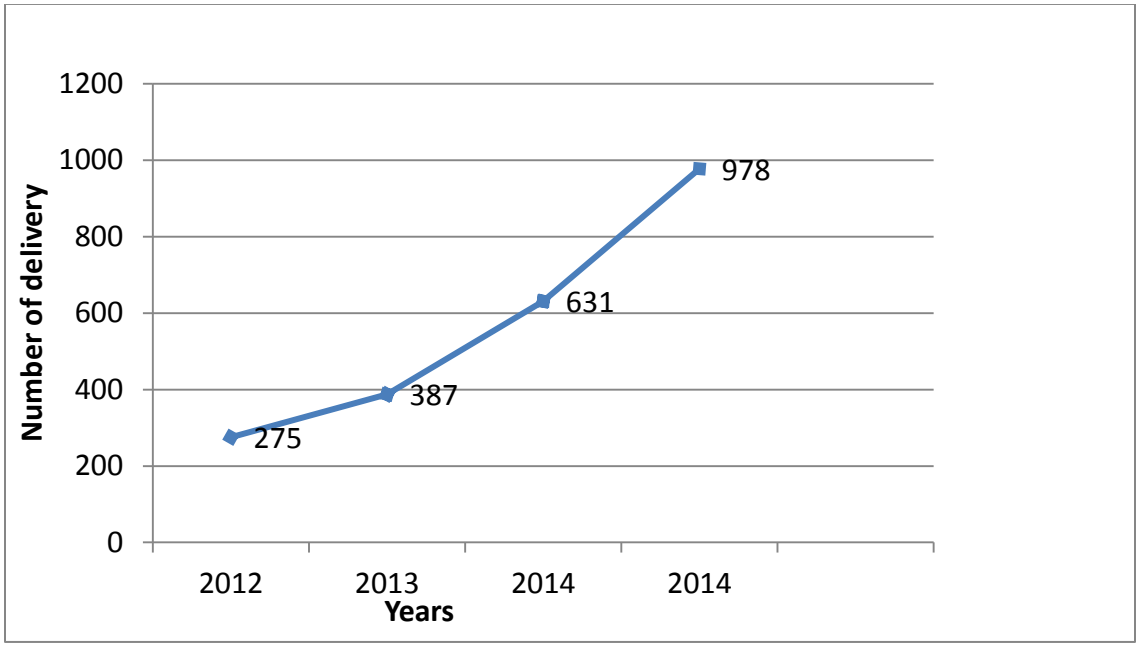

Figure 33: Number of skilled delivery attendant from 2012-2015 in West Armachiho district, Ethiopia 2015

Immunization coverage

Of the total targeted under one age children (1525) for immunization 92%, 106.3%, 106.7% and 101.6%were vaccinated for BCG, penta1, penta3 and measles respectively in 2015 as shown in the table below.

Table 28: Immunization performance and coverage by health facility, west Armachiho, Amhara, Ethiopia, and 2015

Name of health facility	BCG		PAB		Penta1		Penta3		measles		Penta3 DOR	Measles DOR
	performance	*coverage*	*performance*	*coverage*	*performance*	*coverage*	*performance*	*coverage*	*performance*	*coverage*		
Abderafi HC	563	90.81	437	70.48	516	90.21	510	89.16	502	87.76	1.2	2.7
Abrhajira HC	249	88.3	315	111.7	283	108.8	277	106.5	268	103.1	2.12	5.3
Mogessie HP	66	178.4	69	186.5	69	202.9	62	182.4	56	164.7	10	18.84
Dermaga HP	54	96.43	42	75	70	137.3	75	147.1	75	147.1	-7.14	-7.14
Corhumer HP	116	82.27	63	44.68	140	107.7	147	113.1	132	101.5	-5	5.714
Grarwuha HP	79	101.3	37	47.4	69	95.8	92	127.8	69	95.83	-33.3	0
Z/Merik-01	52	140.5	84	227	63	185	65	191.2	57	167.6	-3.17	9.524
Z/Merik-02	38	73.08	40	76.92	52	108.3	47	97.92	46	95.83	9.615	11.54
Abrhajira	654	95.7	650	95.2	746	118.6	765	121.6	703	111.8	-2.55	5.764
Gabla HC	70	46.4	60	39.7	100	76.9	91	70	91	70	9	9
Torka HP	57	98.28	61	105.2	68	128.3	67	126.4	58	109.4	1.471	14.71
Meharsh HP	20	34.48	10	17.2	20	37.7	35	66.04	31	58.49	-75	-55
Enzelish HP	44	64.71	9	13.2	38	60.3	49	77.78	44	69.84	-28.9	-15.8
total	1417	92.9%	1203	78%	1496	106.3%	1501	106.7%	1429	101.6%	-0.33	4.479

In the district measles and Penta3 dropout rate was higher in Mogessie and Zemene Merik kebele2 which was 18.8% for measles, 10% for penta3 and 11.5 % for measles and 9.6% for penta3 respectively. Measles and penta3 had negative dropout rate in Dermaga, Meharsh and Enzelish health posts.

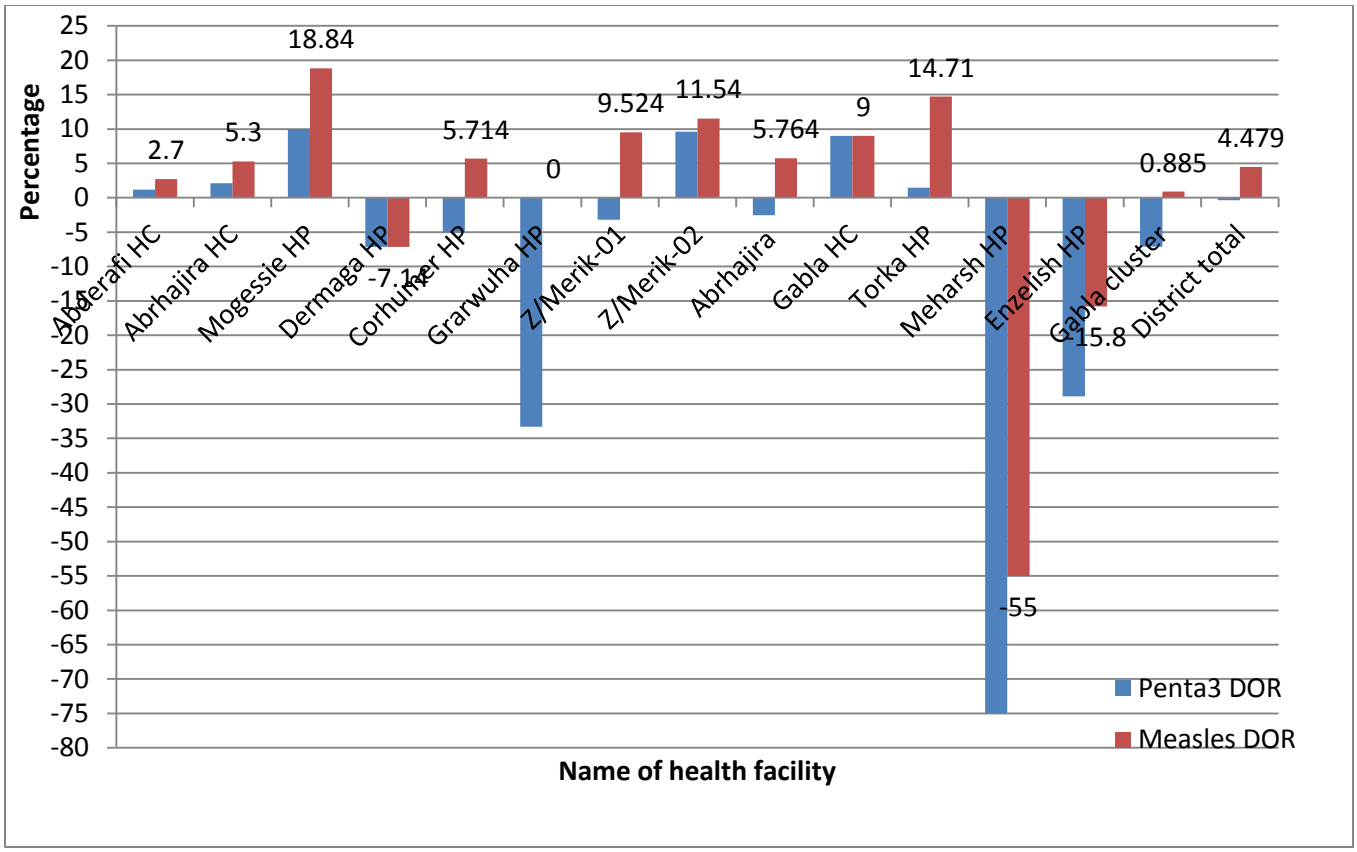

Figure 34: DOR of penta3 and measles by health facility West Armachiho district, Amhara, Ethiopia, 2015

In the district Measles, Rota2 and penta3 vaccination coverage were higher than 80% in all kebeles except Meharsh health post, Gabla health center and Enzelish health post in 2015.

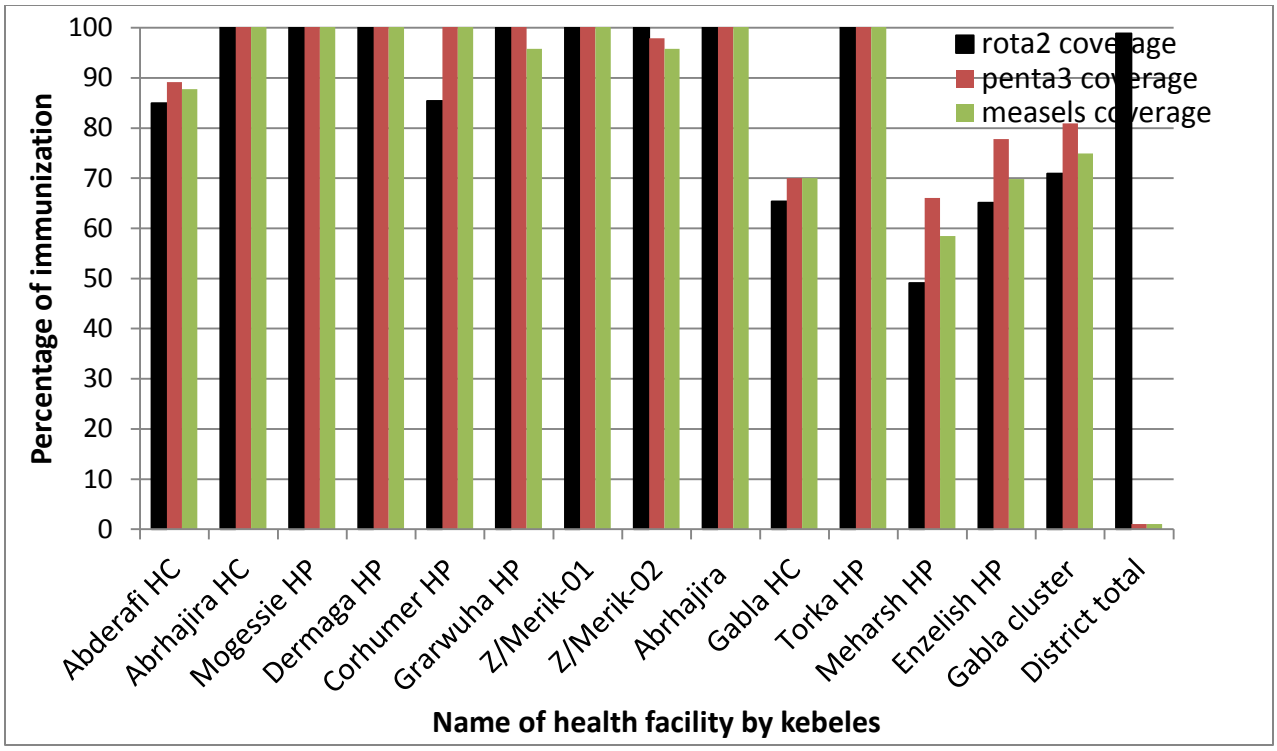

Figure 35: Penta3, rota2 and measles vaccine coverage by kebeles west Armachiho district, Amhara, Ethiopia, 2015

Water, hygiene and sanitation

From the total kebeles in the district 8(57%) kebeles were graduated for open defecation free. The district safe water coverage was 38.8% and 52.32% in urban and rural respectively. Total district safe water coverage was 49% in 2014/2015.

Table 29: Type of water source west Armachiho, Amhara, Ethiopia, 2014/2015

Type of water source	number	functional
Hand pump	16	8
Tie pump	6	5
Pipe water	30	30

Health education

Governmental health facilities worker, health extension worker and non-governmental organization MSF have taught the community and other mobile population at the facility, house to house and at mobile sites. There were 111,458 people have got health education about malaria prevention and transmission, hygiene sanitation, bed net utilization, drug use, leishmaniasis transmission and prevention, HIV/AIDS transmission and prevention and other topics.

Diseases included in Public health emergency

Immediately and weekly reportable diseases

In the district there were 14 immediately reportable diseases reported to the higher zonal level by facility based reporting format. These were:

Yellow fever
Viral hemorrhagic fever (VHF),
Acute flaccid paralysis (AFP/polio),
Cholera,
Avian human Influenza (AHI),
Anthrax,
Rabies,
Measles,
Neonatal tetanus (NNT),
New human influenza (H1N1),
Guinea worm,
Sever acute respiratory syndrome (SARS),
Smallpox,

There were 7 weekly reportable diseases to the area these were:

Relapsing fever,
Typhoid fever
Typhus,
Malnutrition
Dysentery,
Malaria,
Meningitis,
Visceral Leishmaniasis,

Discussion

Health service coverage was 100 according to the federal ministry of health system organization population ratio, which means 1 primary hospital to 60,000-100000, 1 health center to 15,000 - 25,000 population and 1 health post to 3000-5000 population(5). Health professional population ratio of nurses and health officers in the area was 9.7 and 1.6 per 10, 000 population, higher than national professional population ratio of nurses and health officers of 4.3 and 0.77 per 10,000 populations respectively (6). In the district 92% of kebeles were accessible for transportation. Hygiene sanitation programme of open defecation free and safe water supply were 57% and 49% respectively, but poor, as compared with the national targeted program of 80% and 77% respectively.

Malaria was the main public health concern and the leading causes of morbidity with a total of 30,424 cases were seen at outpatient department in the year 2014/2015. IRS coverage targeted kebeles and LLINS distribution were 100%, which were higher than the national target of 77% and 90% respectively. The trend of maternal health service was improved. In the district first ante natal care (ANC1), PMTCT and institutional delivery were 120%, 97%, and 64% respectively; higher than the national target of 90%, 77% and 64% respectively. Skilled birth attendant and PMTCT in the district were higher than the national coverage of SBA and PMTCT 60.9% and 92.6% respectively in 2015 (6). Skilled birth attendant coverage in the district (2015) was approximately three times higher than the national coverage of 2013(23%) (7). A community-based cross-sectional study design in Abuna Gindeberet district, West Shewa, Oromia region, Ethiopia (2013) showed that 82.4%(579/703) of the mothers had received antenatal care services during their recent pregnancy(8). Skilled birth attendant were increased as compared with the previous subsequent years, 2012(275), 2013(387), 2014(631, 64%) and 2015(978) higher than a community based cross-sectional study conducted in Ankasha Gugsa district in Awi zone; Amhara Regional State of Ethiopia (2014) showed that skilled birth attendance was 18.8 %(9). And also ANC1 and SBA in West Armachiho district was higher than A cross-sectional survey of 500 women aged 15–49 years conducted in Wolisso, Wonchi and Goro districts, South West Shoa Zone, Ethiopia (2013) showed that coverage of at least four ANC visits and SBA at delivery were 45.5 and 28.6 %, respectively(10).

Of the total target of 1525 children for immunization, 106.7% were vaccinated for penta3 and 101% were vaccinated for measles dose, which were higher than the national target of 96% and 90% respectively (6).

In the district DOTS programed were given at all health posts and health centers. In 2015 TB case detection rate and cured rate were 100% and 86% respectively, which were higher as compared with the national targeted tuberculosis case detection rate and cured rate of 75% and 85% respectively (11). In this study a total of 248 people were detected for all form of TB, higher than Ethiopian national based population survey conducted in 2011which showed the prevalence of all forms of TB in Ethiopia is estimated to be 240 (182-298)/100,000(4).

From the total MDR TB cases (14), 1 case had developed X-DR TB (8.3%), which was lower than the global estimated of 9.7 %(12). According to the recent national TB drug resistance surveillance report, 2.3% of new TB cases and 17.8% of previously treated TB cases were estimated to have MDR (13).

Conclusion

According to 2015 morbidity data in above 5 years age group malaria was the first prioritized public health problem in the area followed by acute febrile illness, but in under- 5 age group acute febrile illnesses was the first leading cause of morbidity followed by non-bloody diarrhea. The prevalence of MDR TB was also another challenged public health problem to the area. The area is at high risk for the occurrence of outbreak due to temporary movement of high number of (300,000-500,000) migrant workers from the neighboring country of Sudan and another neighboring district to the area.

Recommendation

West Armachiho district should improve and strength Prevention and control methods of malaria to reduce morbidity and mortality of the disease. Hygiene sanitation practice and maternal counsel about how to care for their children should be strengthened to prevent diarrheal diseases in children. The government and non-governmental organization should be strongly support the district to prevent and control MDR TB successfully.

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Chapter five- Scientific Manuscripts for Peer reviewed Journals

5.1. Seven years Of Visceral Leishmaniasis Surveillance Data analysis at Medicine Sans frontier's Abdurafi Treatment Center West Armachiho District, Ethiopia 2016

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Back ground

Leishmaniasis currently threatens 350 million men, women and children around the world. Visceral leishmaniasis (VL) is a fatal parasitic disease mostly prevalent in lowland areas and affects migrant agricultural workers. Visceral leishmaniasis is caused by the Leishmaniasis donovani complex, which includes Leishmaniasis donovani and Leishmaniasis infantum. An estimated 200,000 to 400,000 new cases of visceral leishmaniasis occur worldwide in each year. This study helps to understand the trend, magnitude and mortality of visceral leishmaniasis at MSF Abdurafi treatment center in the study period (2009-2015).

Methods

Retrospective secondary data analysis was conducted on monthly kala-azar report of MSF Abderafi treatment center in West Armachiho district. We included a total of 11680 patients screened for leishmaniasis in 2009-2015. We entered and analyzed data by Microsoft excel spread sheet.

Results

Among 11680 patients screened for kalazar in the study period (2009-2015), 2131 were primary kalazar cases, 198 kalazar were relapse and 19 were post kalazar dermal leishmaniasis. The case fatality of kalazar ranged from 0.9% in 2014 (4/469) to 7.4% in 2013(22/296). The highest cure rate was in 2015 (96%), and the least was in 2009 (89%). The total case fatality rate during study period was 4% (92/2263). The highest HIV/Kala-azar coinfection was in 2009 which was 15%, and the least was in 2014 which was 4.8%.

Conclusion

Visceral leishmaniasis was highly prevalent in the area. There was high kala-azar mortality rate and majority of deaths were unrecognized. Prevalence rate of VL-HIV co-infection and relapse was higher at MSF Abdurafi kalazar treatment center in West Armachiho district.

Recommendation

Ministry of health should strength prevention and control mechanisms of kala-azar. Ministry of health and MSF Holland should conduct further studies for the cause of death among kalazar patients, because there may be drug toxicity or other complication.

Key words; Kala-azar, Leishmaniasis, Visceral, Surveillance, West Armachiho, Ethiopia

Introduction

VL (also known as kala-azar, a Hindi term meaning "black fever") is caused by the L. donovani complex, which includes L. donovani and L. infantum (the latter designated *L. chagasi* in the New World); these species are responsible for anthroponotic and zoonotic transmission, respectively. India and neighboring Nepal, Bangladesh, Sudan, and Brazil are the four largest foci of VL and account for 90% of the world's VL burden, with India the worst affected. Zoonotic VL is reported from all countries in the Middle East, Pakistan, and other countries from western Asia to China. Endemic foci also exist in the independent states of the former Soviet Union, mainly Georgia and Azerbaijan. In the Horn of Africa, Sudan, Ethiopia, Kenya, Uganda, and Somalia report VL. In Sudan, large outbreaks are thought to be anthroponotic, although zoonotic transmission also occurs. VL is rare in West and sub-Saharan Africa.

Leishmaniasis occurs in 98 countries most of them developing in tropical and temperate regions. Two million cases occur annually, of which 1–1.5 million are CL (and its variations) and 500,000 are VL. More than 350 million people are at risk, with an overall prevalence of 12 million. Although the distribution of Leishmania is limited by the distribution of sand fly vectors, human leishmaniasis is on the increase worldwide (1).

A concomitant HIV infection increases the risk of developing active VL by between 100 and 2320 times. In southern Europe, up to 70% of cases of visceral leishmaniasis in adults are associated with HIV infection (2).

The risk of treatment failure for VL is high, regardless of the drug used, and all co-infected patients will relapse – and eventually die – unless they are given antiretroviral therapy (ART)(3).

The visceral form is present in 70 countries. The largest focus of VL is in the south-east Asian region, with an estimated 300 000 cases in 2006. East Africa has approximately 30 000 cases per year (4).

The reported case fatality rate for VL in Brazil in 2006 was 7.2%. In the Indian subcontinent, the focus responsible for the largest proportion of global VL cases, reported case fatality rates ranged from 1.5% (93 deaths/6224 VL cases from 2004–2008) in Bangladesh to 2.4% (853/34,918) in India and 6.2% (91/1477) in Nepal(5).

Methods and materials

Retrospective secondary data analysis was conducted at MSF Abderafi treatment center. We included a total of 11680 patients screened for leishmaniasis in 2009-2015 and, data was retrieved based on screening status. We entered and analyzed by Microsoft excel spread.

Results

There were a total of 11680 number of people were screened for Kalazar with in the period of 2009 to 2015 years. From these 2682 were positive for kalazar which was 23 % of total positivity rate. In 2009 there were highest positivity rate than the other 7 years which was 33%, and the least was in 2015 which was 19% of the total kalazar screened patients. From the total positives of 2682 kalazar patients, of which 2343 kalazar patients were commencing treatment which was 87% of the total. From the total numbers of patients commencing treatment 2131 cases were primary kalazar, 198 cases were relapse, and 19 cases were post kalazar dermal leishmaniasis. In the years 2009 to 2015 kalazar commencing treatment, 2263 patients were exited from the treatment, of these 2096 patients were cured (92.6%), 92 kalazar patients were died (4%), and 18 patients were defaulted the treatment (0.8%).

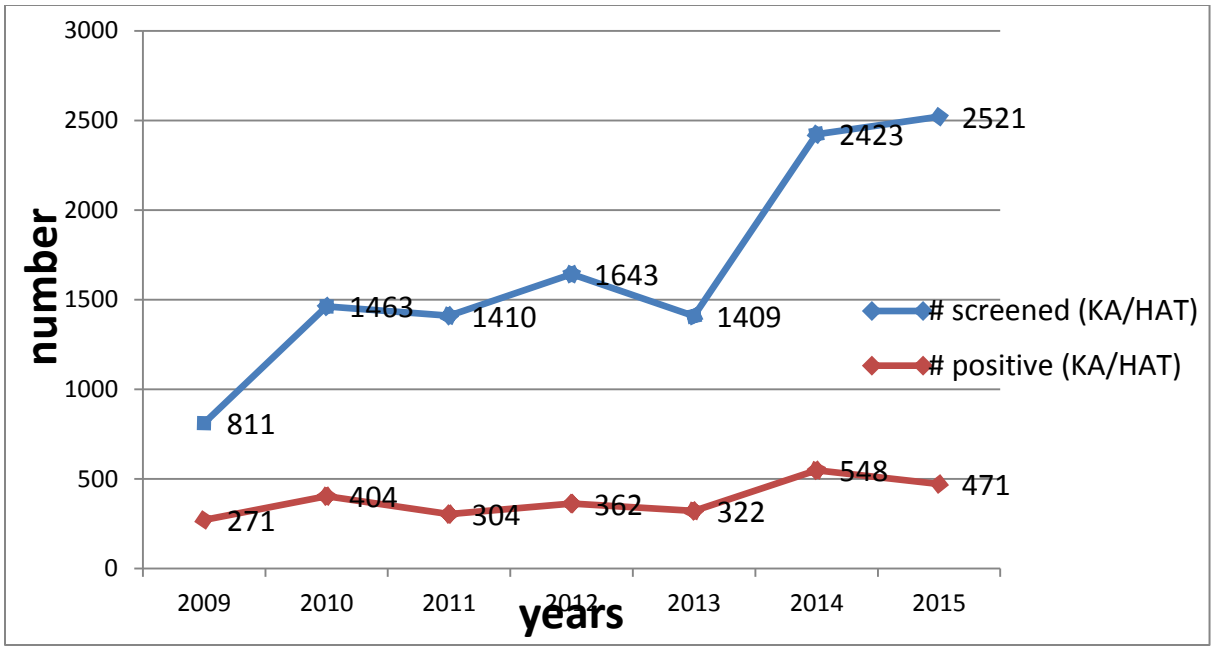

Figure 36: Trend of kalazar screening and number of positives by year West Armachiho district, North Gondar zone, Amhara, Ethiopia, 2009-2015

In the study period (2009-2015) there were a total of 198 relapse. In the year 2011 there was highest cases of relapse which was 41, but in the year 2009 there was 15 cases of relapse lower as compared with the next 6 years of kalazar relapse. But in the year 2011 and 2013 there were higher kalazar relapse which was 13% in each two years. From the total kalazar relapse patients the least was in 2009(6%).

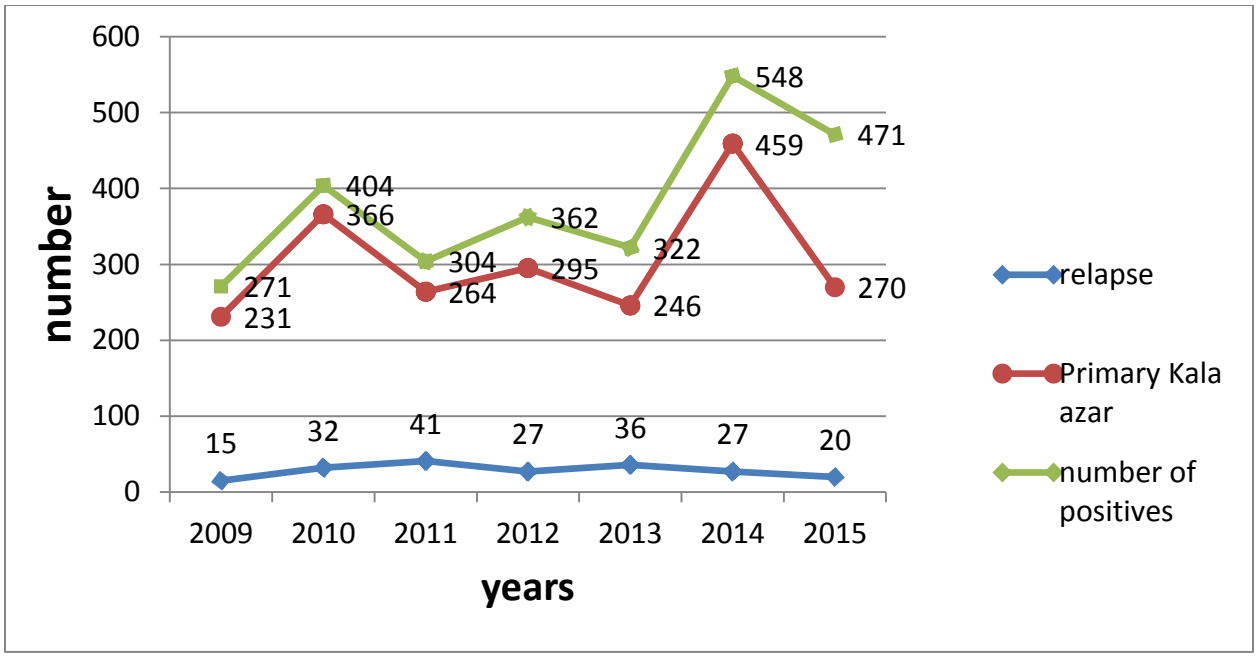

Figure 37: Trend of primary kalazar and relapse among positives by year in West Armachiho district, North Gondar zone, Amhara, Ethiopia, 2009-2015

Kala-azar Cure rate, relapse rate and positivity rate

In the period of 2009-2015 kalazar positivity rate was decreased. There was high positivity rate in 2009 which was 33%.

Among the total number of 2263 exited kalazar patients from treatment, 2096 were cured (92.6%). In 2009 there was 89% of cured rate, which was the least as compared with the rest of the study years, but the highest cure rate was in 2015(96%). In the study period the least and the highest kala-azar relapse rate was 6% and 16% in 2009 and 2011 respectively.

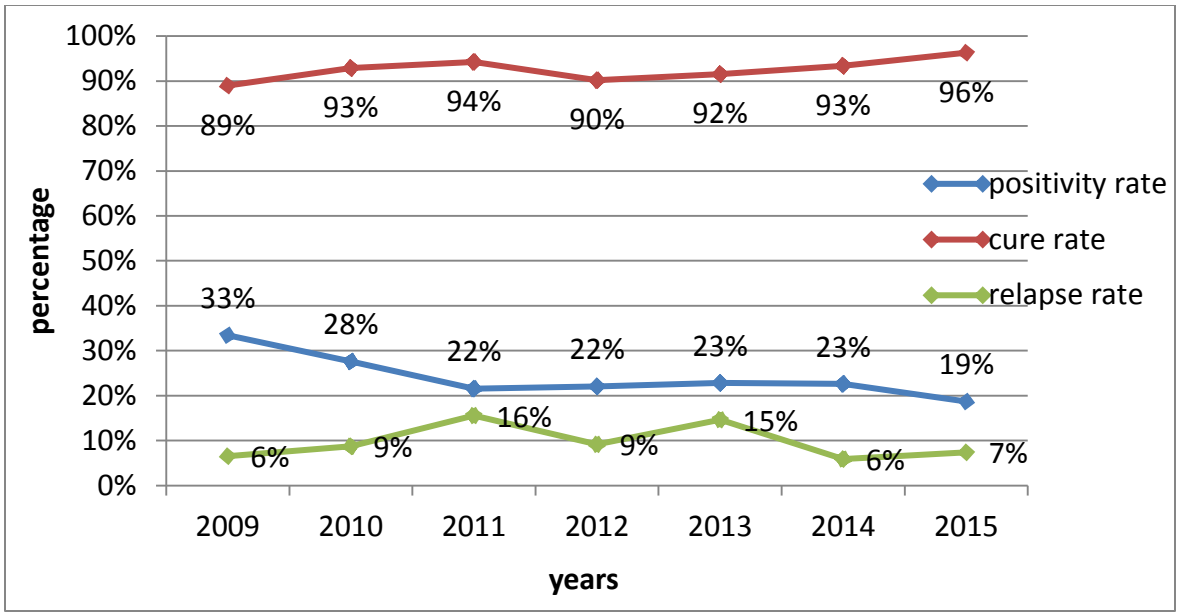

Figure 38: Trend of cure rate, positive rate and relapse rate of kalazar patients by year in West Armachiho district, North Gondar Zone, Amhara, Ethiopia, 2009-2015

Mortality rate

In the period of 7 years a total of 92 kalazar patients were dead with mortality rate of 40.6 per 1000 population .in the year 2013 kalazar mortality rate was high with a rate of 74.3 per 1000 population as compared with the rest of 7 years mortality rate.in the year 2014 kalazar mortality rate was 8.5 per 1000 population, which was low as compared with the rest of 7 years mortality rate of kalazar.

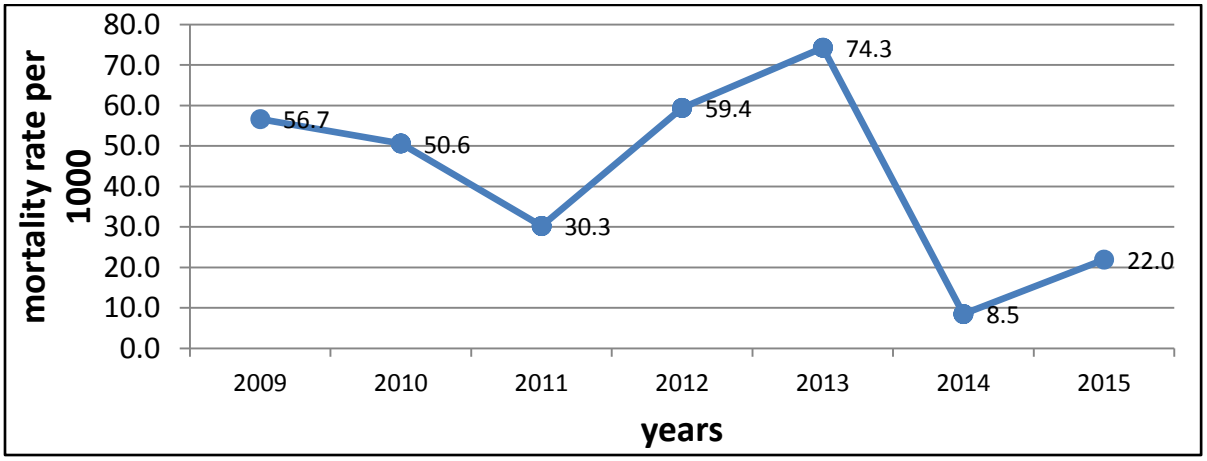

Figure 39: Trend of mortality rate of kalazar in West Armachiho district, north Gondar Zone, Amhara, Ethiopia, 2009-2015

The trend of HIV- Kala-azar co-infection rate in seven years was decreasing in regular manner except in 2011 as shown in the figure below..

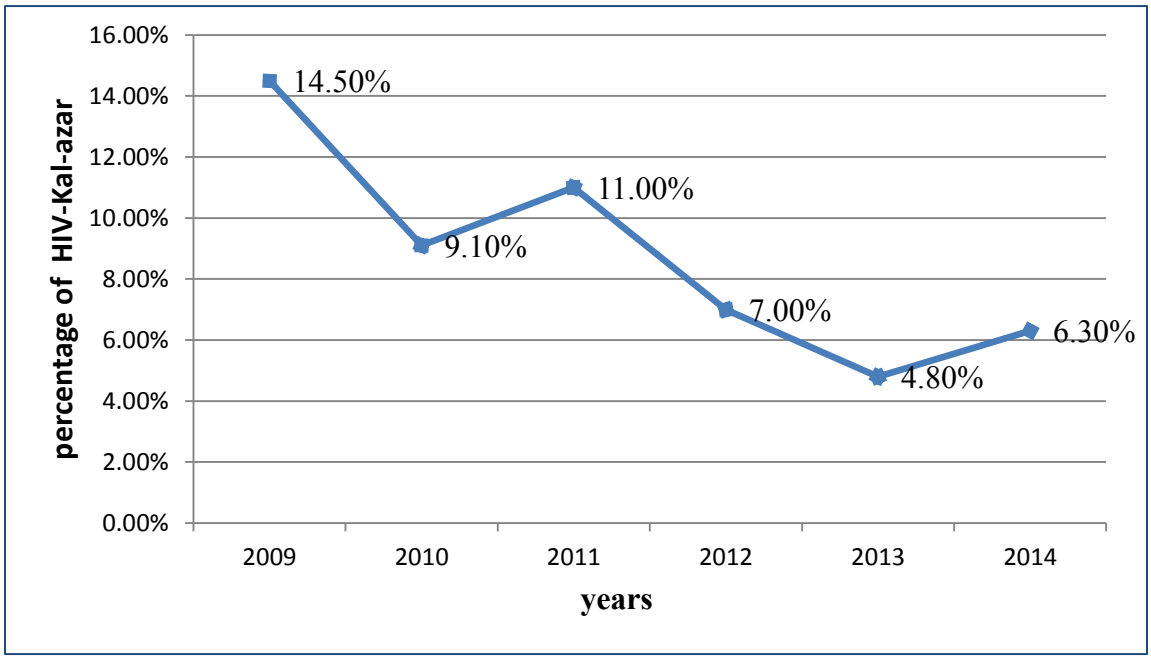

Figure 40: Rate of HIV/ Kalazar co-infection in West Armachiho district, Amhara region, Ethiopia, 2016

In this study on the averagely 13 (92/2263) persons per year were dead by visceral leishmaniasis within 7 years among kalazar patients exited at Abderafi MSF kalazar treatment center in West Armachiho district. The case fatality rate reported by MSF Holland at Abdurafi kalazar treatment center was 4% (92/2263 VL cases from 2009-2015), which was lower than hospital-based deaths case-fatality rate for VL in Brazil in 2006 was 7.2% and 6.2% (91/1477) in Nepal, but higher than reported case-fatality rates ranged from 1.5% (93 deaths/6224 VL cases from 2004-2008) in Bangladesh to 2.4% (853/34,918) in India. And also in this 7 years(2009-2015) death reported there was higher case fatality rate in 2013 that was 7.4% (22/296) in Abderafi at MSF Holland kalazar treatment center. In south Sudan community based longitudinal study showed that there was 20% case fatality rate of visceral leishmaniasis. Of the total reported treatment exited cases of 2263 patients ,2096 were cured .the total cured rate of kalazar patients in the period of 2009-2015 reported was 92.6%(2096/2263,report of 2009-2015). This cured rate was higher than kalazar cured rate of Amhara region 90% reported from 1998-2003 years (6). Of the report of cured rate by MSF Holland at Abdurafi kalazar treatment center in the year 2015 was 96%, which was higher than the

cured rate of the rest of 7 years (2009-2015), and the lowest was in 2009(89%). The highest kalazar patient cured rate of Amhara region reported from 2006-2011 was in 2006 (94%), and the least was in 2008(70%) (6).

Conclusion

Visceral leishmaniasis was highly prevalent in the area. There was high kala-azar mortality rate and majority of deaths were unrecognized. Prevalence rate of VL-HIV co-infection and relapse was higher at MSF Abdurafi kalazar treatment center in West Armachiho district.

Recommendation

Ministry of health should strength prevention and control mechanisms of kala-azar. Ministry of health and MSF Holland should conduct further studies for the cause of death among kalazar patients, because there may be drug toxicity or other complication.

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5.2. Measles Outbreak Investigation in Basso Liben District, Amhara Region, Ethiopia 2017

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Abstract

Introduction

Measles is an acute, highly contagious viral disease caused by measles virus and transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva. Globally during 2002–2009, 180,284 suspected measles cases were reported, of these, 97,204 (54%) were discarded because of a negative or indeterminate measles specific IgM test result; 10,071 (14%) had unknown classification; and 73,009 (41%) were confirmed as measles. Among 2,190 suspected measles cases reported in 61 separate outbreaks in Ethiopia (2015), of which 929 cases were confirmed positive. The aim of this study was to investigate the outbreak and identify associated factors for measles outbreak and to take possible intervention measures in Basso Liben district.

Methods and materials

We conducted 1: 2 unmatched case control studies. Face to face interview was conducted to gathered information from cases and controls by using structured questionnaire. Sample size was calculated using Stat calc function of Epi-info version 7 with confidence level of 95%, power of 80%, and assuming percent of controls exposed 18% and percent of cases with exposure 52% for un-vaccination. Total sample size included in the study was 30 cases and 60 controls. Before conducting interview informed verbal consent was obtained from all study participants to meet ethical standards. We entered data to Epi info version 7 and analyzed it by using SPSSversion20 software; finally the model was fitted by using multivariate logistic regression with 95% confidence level and p-value <0.05.

Results

In Basso Liben district the total attack rate of measles was 1.24 per 1000 population. The highest age specific attack rate was in under- one age groups (4.76 per 1000 children), and the next was in age groups 1-4 years old which was 3.28 per 1000 population. In multivariate logistic regression

contact history with measles case AOR=8.132 (95% CI 2.047, 32.297) and presence of measles case in the neighbour AOR= 6.928 (95% CI 1.37, 29.12) were risk factors for contracting measles. But previous history of measles case AOR= 0.10 (95% CI 0.02, 0.56) and vaccinated with measles vaccine AOR=0.11(95%CI 0.021, 0.573) were protective associated factors for measles.

Conclusion

In multivariate logistic analysis presences of measles case in the neighbour and contact with measles case were significant associated factors for contracting measles, but previous history of being measles case and vaccination were protective factors for measles. Basso Liben district health office and health centers should improve and strength routine measles vaccine immunization coverage and also under- 30 years age groups should be targeted for supplementary immunization programme for measles.

Key words; measles, outbreak, Basso Liben, case control, Ethiopia

Introduction

Measles is an acute, highly contagious viral disease caused by measles virus. This highly contagious virus is transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva.

Measles is one of the most highly infectious diseases known. Measles can be particularly severe in susceptible infants, pregnant women, and immuno compromised individuals. The most effective way to control measles is by active immunization of a high proportion of the population. Vaccination against measles was introduced in 1968 but coverage was sub-optimal up to the late 1980s. The European region of the World Health Organization has adopted a target for the elimination of measles from the region by 2010 (1).

Measles is one of the most contagious viral diseases known, and it has been preventable since 1963 through vaccination. Serologic and epidemiologic studies indicate that 1-dose measles vaccine efficacy is approximately 85%–90% when given at 9 months of age, and that 2-dose efficacy is 99% when the second dose is given at 12 months of age (2).

Routine MCV coverage, plus supplementary immunization activities (SIAs) reaching 145 million children in 2012, led to a 77% decrease worldwide in reported measles annual incidence, from 146 to 33 per million population, and a 78% decline in estimated annual measles deaths, from 562,400 to 122,000. Compared with a scenario of no vaccination, an estimated 13.8 million deaths were prevented by measles vaccination during 2000–2012(3).

The number of measles deaths globally decreased by 71% between 2000 and 2011, from 542 000 to 158 000. Over the same period, new cases dropped 58% from 853 500 in 2000 to 355 000 in 2011 globally (4).

During 2002–2009, there were 180,284 suspected measles cases reported. Of these, 97,204 (54%) were discarded because of a negative or indeterminate measles specific IgM test result; 10,071 (14%) had unknown classification; and 73,009 (41%) were confirmed as measles. Among the 73,009 confirmed cases, 31,915 (44%) were classified as laboratory confirmed; 32,562 (45%) as epidemiologically linked; and 8532 (12%) as clinically compatible. During 2002–2009, males accounted for 52% of confirmed measles cases (5).

2,190 suspected measles cases were reported in 61 separate outbreaks in Ethiopia (2015), of which 929 cases were confirmed positive. The majority of the cases were from Nejo and Nole woredas of West Wellega zone (Oromia) and Kola Tembien woreda of Central Tigray zone (Tigray). Twenty eight per cent of cases were children under5 and 33 per cent of those affected were above 15 years of age (6).

Methods and materials

We conducted 1: 2 unmatched case control study design. A case was a person who residing in Basso district that tested positive for IgM or any person with fever, maculo-papular generalized rash and cough, coryza (runny nose) or conjunctivitis. Face to face interview was conducted to gathered information from cases and controls by using structured questionnaire. Sample size was calculated using Stat calc function of Epi-info version 7 with confidence level of 95%, power of 80%, and assuming percent of controls exposed 18% and percent of cases with exposure 52% for vaccination. Total sample size included in the study was 30 cases and 60 controls beyond the minimum calculated sample size. Cases and controls were selected by non- probabilistic purposive sampling technique. Before conducting interview informed verbal consent was obtained from all study participants to be the study ethical. We entered data to Epi info version 7 and analyzed by

SPSSversion20, finally the model was fitted by using multivariate logistic regression with 95% confidence level and p-value <0.05.

Results

An index female case who was 28 years old came to Yelamgiej health center at February 2/2016 presented with fever, cough and rash but unknown history of measles vaccination status and she had no history of travel but participated at wedding. A total of six(6) suspected measles case based was sent to Amhara regional public health institute for laboratory confirmation, of whom four out of six (4/6) were positive for IGM, enough to confirm measles outbreak. Starting from January 3/2017 to the beginning of March the number of measles cases reported by basso liben district increased in irregular manner. During measles epidemic in basso district the highest number of cases were reported at February 18/2017 and the next was reported at February 16/2017. In Basso district 201 people were affected by measles in the period between February and April.

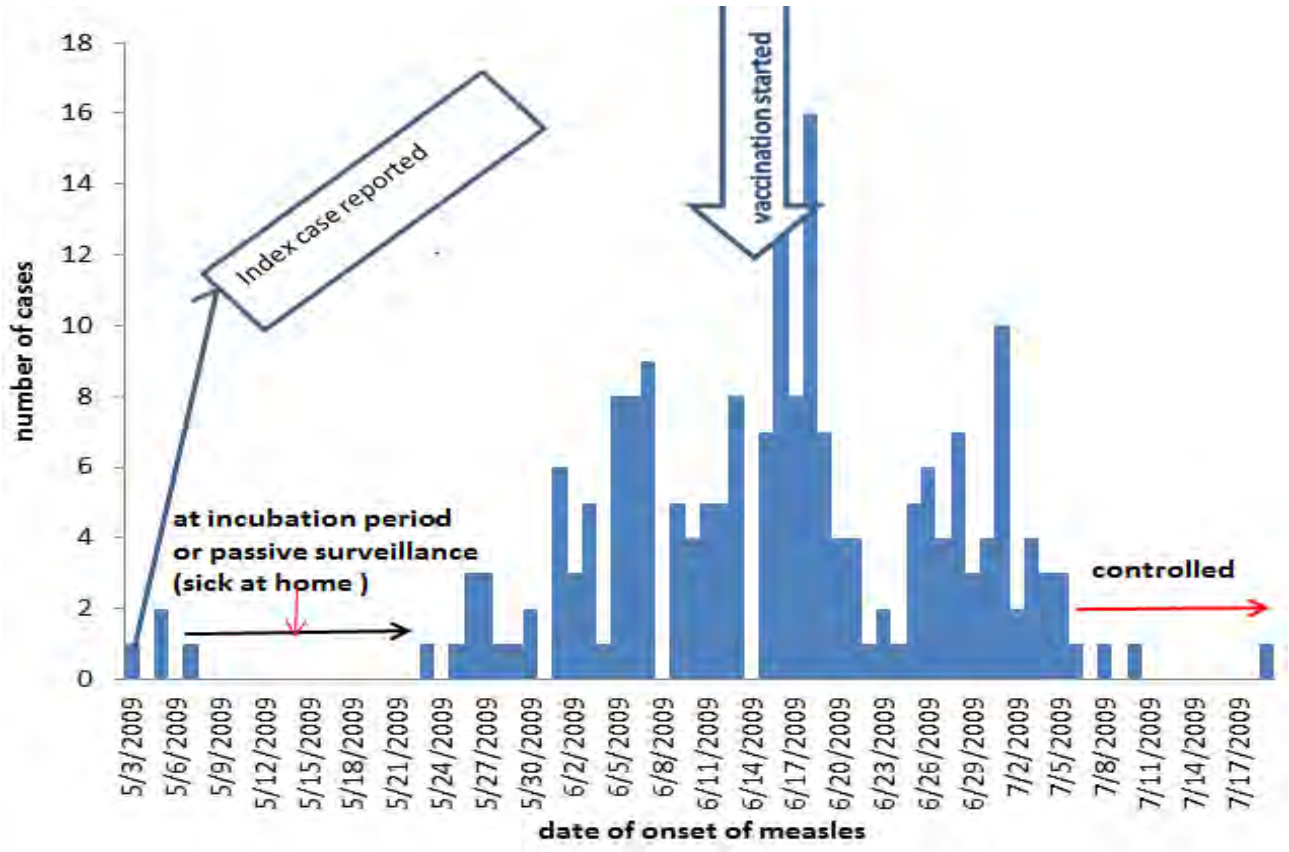

Figure 41: Measles cases date of onset in Basso Liben district, Amhara region, Ethiopia, 20017

Out of 201 total measles cases reported from 15 kebeles, 121(60%) cases were reported from Yelamgiej, Komie and Anjim kebeles. Kebele attack rate of Yelamgiej, Komie and Anjim kebeles were 10.5, 4 and 3.5 respectively.

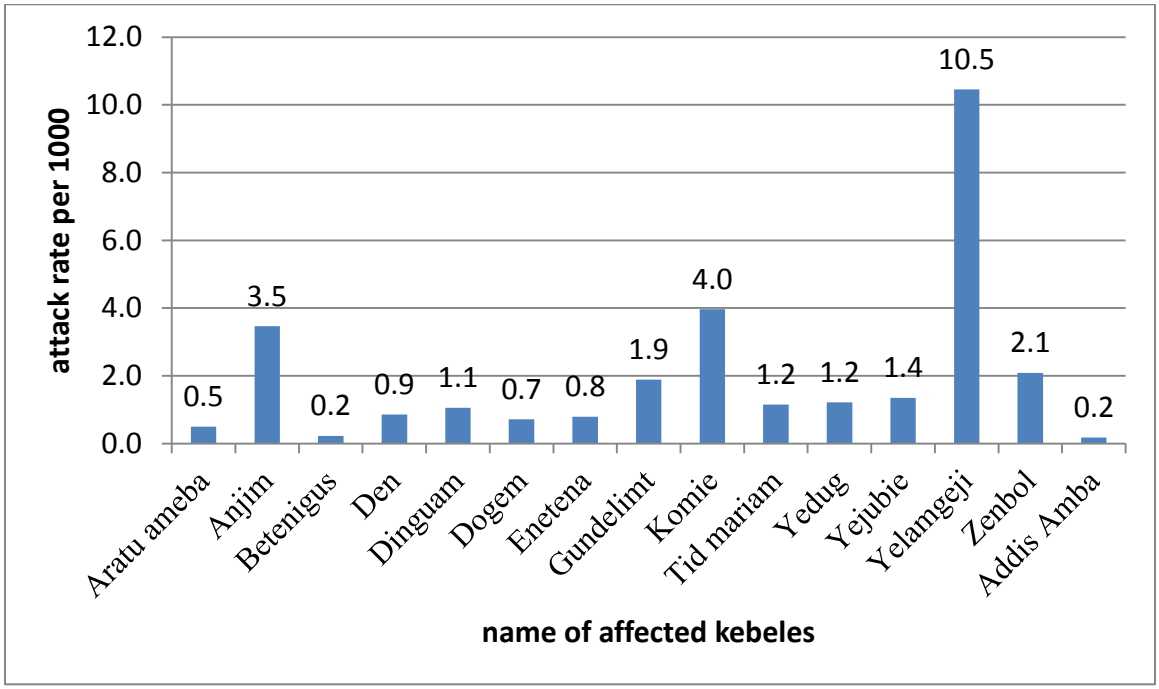

Figure 42: measles attack rate by affected kebeles in Basso Liben District, Amhara region, Ethiopia, 2017

Among the total measles cases 51% were females. The median age of the case was nine (9) years old with a range of 2 months to 50 years. Attack rate of measles in female and male was similar, which was 0.08 per 1000 population in Basso district.

In Basso Liben district the total attack rate by measles outbreak was 1.24 per 1000 population. The highest age specific attack rate in basso district was in ≤1year‘s old age group (4.76 per 1000children) and the next was in 1-4 years old age group, which were 3.28 per 1000 population in the age category. Age groups > 30 years old age was the least affected group by measles outbreak in the district, which was attack rate of 0.04 per 100 populations in the age group.

Among all populations affected by measles, 20%, 36.8% and 14.9 % were given zero doses, one dose and two doses respectively, but 28.4% were unknown history of measles vaccine dose. Out of measles cases that were not given measles dose, 10.5% were under five year‘s old age groups. Out of the total measles cases with unknown history of measles vaccine dose (28.4%), 24.4% was in the age category of 15-30 age groups.

Table 30: Frequency and percentage of measles dose received by age category among measles cases in Basso district, East Gojam, Amhara region, Ethiopia, 2017

Number of measles dose		Age category of measles case in years						Total
		≤1	1-5	5-10	10-15	15-30	≥30	
.00	Count	14	7	7	5	7	0	40
	% of Total	7.0%	3.5%	3.5%	2.5%	3.5%	0.0%	19.9%
1.00	Count	9	28	13	9	15	0	74
	% of Total	4.5%	13.9%	6.5%	4.5%	7.5%	0.0%	36.8%
2.00	Count	1	12	9	3	5	0	30
	% of Total	0.5%	6.0%	4.5%	1.5%	2.5%	0.0%	14.9%
unknown	Count	0	0	1	5	49	2	57
	% of Total	0.0%	0.0%	0.5%	2.5%	24.4%	1.0%	28.4%
Total	Count	24	47	30	22	76	2	201
	% of Total	11.9%	23.4%	14.9%	10.9%	37.8%	1.0%	100.0%

Among the total measles cases 100%(30/30), 93%(28/30), 97%(29/30) and 86%(26/30) were developed fever, cough, rash and conjunctivitis respectively. And also 67%, 13%, 53% and 20% cases were developed pneumonia, vision change, mouth ulcer, and ear infection of measles complication respectively.

Multiple logistic regressions

In multivariate logistic analysis independent factors which remained significantly associated for contracting measles in Basso Liben district during an outbreak were, contact history with measles case AOR=8.132 (95% CI 2.047, 32.297) and presence of measles case in the neighbour AOR= 6.928 (95% CI 1.37, 29.12). But previous history of measles case AOR= 0.10 (95% CI 0.02, 0.56) and vaccinated with measles vaccine AOR=0.11(95%CI 0.021, 0.573) were protective associated factors for measles during the outbreak, as shown in the table below.

Table 31: Multivariate logistic analysis of risk factors for measles in Basso district, East Gojam zone, Amhara region, Ethiopia, 2017

Variables	Controls (%) cases (%)			AOR	P-value	95% CI for AOR	
vaccination	no	32(53%)	7(23.3%)				
	yes	28(47%)	23(76.7%)	0.11	0.009	0.021	0.573
Previous history of measles	no	22(36.7)	24(80%)				
	yes	38(63.3%)	6(20%)	0.10	0.005	0.02	0.573
Exposure with measles case	no	49(81.7%)	9(30%)				
	yes	11(18.3%)	21(70%)	8.13	0.003	2.047	32.97
Presence of cases in neighbour	yes	51(85%)	16(53.3%)	6.93	0.012	1.37	29.12
	No	7(11.7%)	14(26.7%)				
Age				0.914	0.031	0.843	0.99

Discussion

During measles outbreak investigation in Basso district males were accounted 49 % of cases, lower than the regional measles case-based surveillance data collected in 40 African countries during 2002–2009 which males accounted for 52% of confirmed measles cases (7).

In this study the total attack rate of measles outbreak per 1000 population in Basso district was 1.24, higher than a total attack rate of measles outbreak investigation conducted in the Kebridahar town of Somali Region, Ethiopia in 2013 which was 7.9 per 1000 population (8). Also over all attack rate of measles in in this investigation was lower than overall AR of a case control outbreaks

of measles in district Kangra, North India which was 42 per 1000 population (9). This difference might be results from higher immunity in Basso Liben district residence populations or improved vaccination as compared with the previous. Among all cases affected by measles outbreak in Basso district, 20% was unvaccinated, lower than a study conducted in Zaka district, Zimbabwe, 2010 which was 29% unvaccinated. The most common symptoms in Basso district among cases were fever 100 %(30/30), rash 97 %(29/30) and conjunctivitis 86 %(26/30) all most nearer to a study in Zaka district, Masvingo Province, Zimbabwe, 2010 which showed that maculo-papular rash 103(93.6%), red eyes 97(88%) and fever 110 (100%) during the outbreak(10). Among all measles cases in Basso Liben district during the outbreak 12% of the affected age group was below one year‘s old age, lower than a study conducted in Shelby County, Tennessee, April–May 2016 which was 43 %(11). This difference might be due to smaller sample size (6 cases) in that study than ours study. Under 15 years old age measles cases in Basso district were accounted 61%, lower than retrospective study conducted in Sudan which 92% were below 15 years old out of 1144 measles patients (12). I suggested that this difference might be due to measles vaccine coverage currently was improved than the previous in lower age groups. Among all measles cases in Basso district, 20% were unvaccinated lower than measles outbreak investigation conducted in Sudan (2004) which was 48.6% (12). This discrepancy might be the result of better access to health care and higher vaccine coverage in Basso district that we investigated. Forty cases (20%) were unvaccinated, 36.8% were given single dose and 40 (15%) were given two measles dose different from investigation of a measles outbreak in Cordillera, northern Philippines, 2013 which was 20% unvaccinated, 72% had given single measles dose and the rest was unknown history of measles vaccination (13).

Conclusion and recommendation

In multivariate logistic analysis presences of measles case in the neighbour and contact with measles case were significant associated factors for contracting measles, but previous history of being measles case and vaccination were protective factors for measles. Basso Liben district health office and health centers should improve and strengthen routine measles vaccine immunization coverage and also under- 30 years age groups should be targeted for supplementary immunization programme for measles.

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Chapter six- Abstracts presented and submitted for scientific presentation

6.1. Influenza like Illness Outbreak Investigation and Associated factors, Tehulederie District, Amhara Region, Ethiopia 2016

Authors: Awoke S[1], Sefonias G[2], Yimer S[2]

Address: Addis Ababa University, Ethiopia

Back Ground

Influenza is a viral infection that affects mainly the nose, throat, bronchi and, occasionally, lungs. Globally seasonal human influenza annual outbreaks result in 3–5 million severe cases and between 250,000 and 500,000 deaths. Most infected people recover within one to two weeks without requiring medical treatment. However, in the very young, the elderly, and those with other serious medical conditions, infection can lead to severe complications. The main aim of this study was to investigate the Influenza like illness outbreak and associated factors at Tehulederie district.

Methods and materials

We conducted unmatched case control study design and all 25 suspected influenza cases; and 50 controls were included in the study. The data was entered to Epi Info version 7 and analyzed by SPSS version 20 software by using multivariate logistic regression to determined statistical significance of factors with p-value <0.05.

Result

Attack rate of influenza outbreak was 0.09, 0.28 and 0.2 in the age category of <5, 5-14, and ≤15 age groups respectively. Among females the attack rate was 0.32 per 1000 whereas in males it was 0.15 per 1000. Having sick person in the family, travel history to influenza affected area and age were significant associated factors for influenza like illness with AOR=5.8, 95%CI (1.37, 24.78), AOR=7.5, 95% CI (1.41, 39.68) and AOR= 0.92, 95%CI (0.86, 0.97) respectively.

Conclusion

Sick person in the family and travel history to influenza affected area were significantly associated factors for influenza. Tehulederie district health office and Hara health center should strength health

education and awareness about influenza like illness and use open transportation system to the community. Sick persons in the family should cover their mouth when they sneezing and coughing.

Key word; Influenza like illness, Outbreak, Risk factors Tehulederie, Ethiopia

6.2. Seven years Of Visceral Leishmaniasis Surveillance Data analysis at Medicine Sans frontier's Abdurafi Treatment Center West Armachiho District, Ethiopia 2016

Authors: Awoke S[1], Sefonias G[2], Yimer S[2]

Address: Addis Ababa University, Ethiopia

Abstract

Back ground

Leishmaniasis currently threatens 350 million men, women and children around the world. Visceral leishmaniasis (VL) is a fatal parasitic disease mostly prevalent in lowland areas and affects migrant agricultural workers. Visceral leishmaniasis is caused by the Leishmaniasis donovani complex, which includes Leishmaniasis donovani and Leishmaniasis infantum. An estimated 200,000 to 400,000 new cases of visceral leishmaniasis occur worldwide in each year. This study helps to understand the trend, magnitude and mortality of visceral leishmaniasis in the period of 2009-2015.

Methods

Retrospective secondary data analysis was conducted at MSF Abderafi treatment center in West Armachiho district. We included a total of 11680 patients screened for leishmaniasis in 2009-2015 and, data was retrieved based on screening status. We entered and analyzed by Microsoft excel spread sheet.

Result

Among 11680 patients screened for kalazar in the study period (2009-2015), 2131 were primary kalazar cases, 198 kalazar were relapse and 19 were post kalazar dermal leishmaniasis. The case

fatality of kalazar ranged from 0.9% in 2014 (4/469) to 7.4% in 2013(22/296). The highest cure rate was in 2015 (96%), and the least was in 2009 (89%). The total case fatality rate during study period was 4% (92/2263). The highest HIV/Kala-azar coinfection was in 2009 which was 15%, and the least was in 2014 which was 4.8%.

Conclusion

Visceral leishmaniasis was highly prevalent in the area. There was high kala-azar mortality rate and majority of deaths were unrecognized. Prevalence rate of VL-HIV co-infection and relapse was higher at MSF Abdurafi kalazar treatment center in West Armachiho district.

Recommendation

Ministry of health should strength prevention and control mechanisms of kala-azar. Ministry of health and MSF Holland should conduct further studies for the cause of death among kalazar patients, because there may be drug toxicity or other complication. **Key words; Kala-azar, Leishmaniasis, Visceral, Surveillance, West Armachiho, Ethiopia**

6.3. Measles Outbreak Investigation and Associated factors in Basso Liben District, Amhara Region, Ethiopia 2017

Authors: Awoke S [1], Sefonias G[2], Yimer S[2]

Address: Addis Ababa University, Ethiopia

Abstract

Introduction

Measles is an acute, highly contagious viral disease caused by measles virus and transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva. Globally during 2002–2009, 180,284 suspected measles cases were reported, of these, 97,204 (54%) were discarded because of a negative or indeterminate measles specific IgM test result; 10,071 (14%) had unknown classification; and 73,009 (41%) were confirmed as measles.

Methods and materials

We conducted 1: 2 unmatched case control studies. Face to face interview was conducted to gathered information from cases and controls by using structured questionnaire. Sample size was calculated using Stat calc function of Epi-info version 7 with confidence level of 95%, power of 80%, and assuming percent of controls exposed 18% and percent of cases with exposure 52% for un-vaccination. Total sample size included in the study was 30 cases and 60 controls. Before conducting interview informed verbal consent was obtained from all study participants to meet ethical standards. We entered data to Epi info version 7 and analyzed it by using SPSSversion20 software; finally the model was fitted by using multivariate logistic regression with 95% confidence level and p-value <0.05.

Result

In Basso Liben district the total attack rate of measles was 1.24 per 1000 risk population. The highest age specific attack rate was in under- one age groups (4.76 per 1000 children), and the next was in age groups 1-4 years old which was 3.28 per 1000 population. In multivariate logistic contact history with measles case AOR=8.132 (95% CI 2.047, 32.297) and presence of measles case in the neighbour AOR= 6.928 (95% CI 1.37, 29.12) were risk factors for contracting measles. But previous history of measles case AOR= 0.10 (95% CI 0.02, 0.56) and vaccinated with measles vaccine AOR=0.11(95%CI 0.021, 0.573) were protective associated factors for measles.

Conclusion

In multivariate logistic analysis presences of measles case in the neighbour and contact with measles case were significant associated factors for contracting measles, but previous history of being measles case and vaccination were protective factors for measles. Basso Liben district health office, Yelamgiej and Betenigus health centers should improve and strengthen routine measles vaccine immunization coverage and also under- 30 years age groups should be targeted for supplementary immunization programme for measles.

Key words; measles, outbreak, Basso Liben, case control, Ethiopia

Chapter seven-Disaster situation visited

7.1. Narrative Summery of Disaster Situation Visited in North and South Gonder, Amhara Region, Ethiopia, 2016

Summery

There were AWD, Scabies and suspected meningitis outbreaks in the last 3 months. The finding indicated that a total of 4639 AWD cases and 35 deaths (CFR= 0.8%); 8009 scabies cases and 35 meningitis cases and 2 deaths (5.7%) were reported since August 2016. However, Borena woreda of S/Wollo zone reported 40 meningitis cases and 2 deaths. Ongoing outbreak of AWD and Scabies was reported. The regional health bureau reported zero stock of emergency drugs and medical supplies. The region anticipated epidemics of malaria, AWD, scabies, measles, malnutrition and meningitis due to the risk factors being identified. In response to the emergencies

Currently nutrition situation in the region is unstable. Of the total 1,133,459 under five children screened in October 2016, 5,064 and 86,906 were SAM and MAM respectively. The GAM was 8.1%. As to pregnant and lactating women, of the total 217,584 screened, 63,258(29.1%) of them reported MAM by the same month October. Six months of SAM cases admission for children in 2015 and 2016 indicated slight change.

Morbidity data have shown that diarrhea, pneumonia, AFI, URTI and skin diseases were the common cause of illness in under five children and AFI, Pneumonia, Malaria, diarrhea and URTI were the leading cause of problem in above five years of age in the assessed districts. In Gonder Zuria and Smada district there was an outbreak of malaria from May to July 2016 and from mid-May to mid-July 2016 respectively.

Objectives

General objectives

To assess public health problems and nutrition emergencies in ensuring appropriate and effective humanitarian planning and responses that leads to reducing morbidity and mortality in the most vulnerable areas of the assessed zones in 2016.

Specific objectives

- To assess the extent, types, magnitude, severity and likely of different public health problems (human epidemics, sever acute malnutrition, etc.) and risks to the populations in most vulnerable districts.
- To assess the existing capacity of the health services to address health and nutrition emergencies likely to occur during the coming six months of 2016;
- To determine the shortcomings (gaps) in the capacity of the existing health services to address health and nutrition emergencies.
- To identify areas where health and nutrition emergency assistance might be needed during the coming six months of 2016 due to acute problems and come up with reasonable estimates of the size of the population needing emergency assistance.
- To recommend and develop necessary plans for fostering preparedness of Health and nutrition for appropriate and adequately addressing potential emergencies;

Methods and materials

Study area

Amhara region is one of the nine administrative regions in the federal democratic republic of Ethiopia. It has total population of 21,134,988 which females accounted for 10,391,023. Under - five children, reproductive age groups and pregnant women accounted for 2861677, 4983630 and 712249 respectively. The region shares boundary with four national regions (Oromia, Tigray, and Afar and Bienshangul Gumuz) and one international border Sudan. In the region, there were ten zones and three administrative cities, 167 districts and about 3345 kebeles, from which 318 were urban kebeles; 58 Hospitals 842 HCs, 3371 health posts.

Amhara region was suffering by various health calamities changes (Elinon) in 2015. In 2015/2016 the region reported epidemics of scabies, H1N1, AWD, measles and suspected meningitis. Population gathering in holy water sites and mobility and safe water shortage are mainly responsible for current AWD and scabies outbreaks in the region.

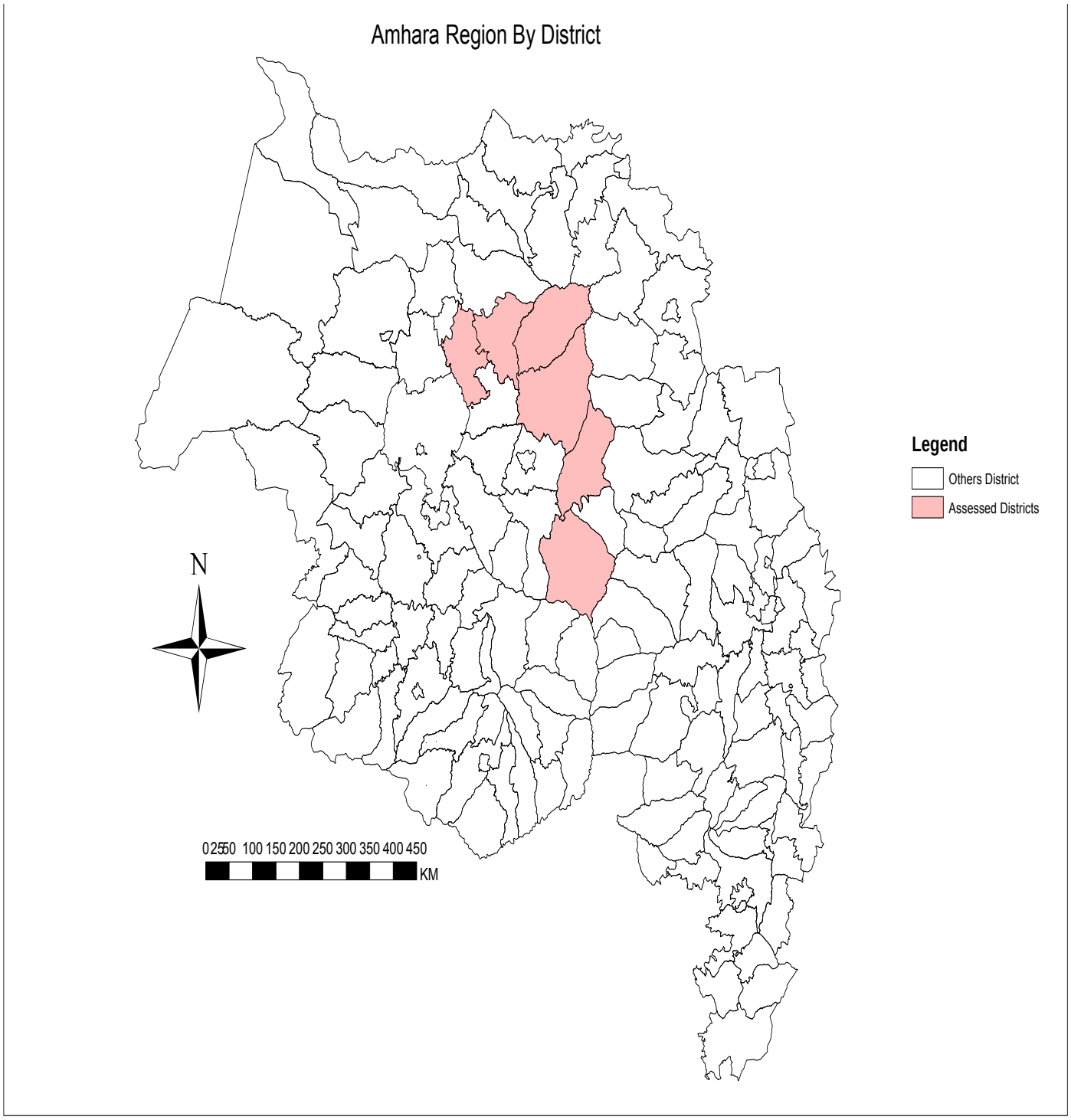

Figure 43: Map of Amhara region and assessed zones, Ethiopia, 2016

Study design

Retrospective cross-sectional study design was conducted from November 21-December 8/2016.

Study unit

Zonal health department, district health office, health centers and health posts were our study unit

Sampling procedure

Areas were selected by non-probabilistic purposive sampling method based on risk of outbreak occurrence, magnitude of nutritional problem and previous experience of disaster and possibility of emergency occurrence.

Data collection

Data was collected by desk review of relevant documents and reports, field assessment of affected districts and areas at risk and interaction and interview with responsible district health office staffs and health workers at health centers.

Data analysis

After we collected and cleaned data it was entered and analyzed by Microsoft excel work sheet.

Results

Socio-Demographic profile

The region had a total population of 21,134,988 which females accounted for 10,391,023(49%). Under -five age groups, reproductive age groups and pregnant women accounted for 2,861,677; 4,983,630(13.5%) and 712,249 respectively.

In North Gonder zone there were a total of 3,439,836 populations with 22 administrative woredas. The zone had nine hospitals, 126 health centers and 563 health posts with 1168 health extension workers. Of the total 126 health centers, 33(26%) of them had water source.

In South Gonder zone there were a total of 2,435,345 populations with 12 districts. The zone had four hospitals, 93 health centers, 378 health posts and 809 health extension workers.

Table 32: Socio-demographic characteristics of the assessed zones

Zone	Total Population	Children < five years	Reproductive age group(15-49)	Pregnant women
N/Gondar	3439836	465754	811113	115923
S/Gondar	2442603	330728	575966	82316

Health profile

Coordination and Management Systems

There were six PHEM officers at regional level and regular PHEM report on the scheduled date. All zones and districts in the region have PHEM officers. Visited zones had coordination forum which involves sectors and in most cases, the meeting was depending on the presence or absence of emergency. Zonal PHEM had annual EPRP but it didn‘t include reproductive health. Zonal health department had budget fund from regional health bureau.

Anticipated epidemics

Based on the risk factors (Elinon) on the ground and current experience of outbreaks such as AWD, Malaria, Measles, Meningitis, Scabies and Malnutrition may be occurred in the region and assessed zones and districts.

PHEM

There was public health and nutrition emergency preparedness and response plan but it was not budgeted. It was reported that only one staff trained on PHEM basic level training in the region. At regional level, there was no PHEM staff who took training on emergency nutrition management. The assessed zones had public health emergency preparedness and response plan (EPRP) but it was not funded. Rapid Response Team (RRT) was established at all districts and health facilities in the assessed zones but regular meeting were not conducted. Of the total 49 health centers of the assessed six districts in N/Gondar(E/Bellessa, W/Bellessa & G/Zuria) and S/Gondar (Ebinat, L/Gayint & Smada) zones, only 20(40.8%) have water access. All the assessed districts have RRT and they have PHEM focal person in each cluster health center of the visited districts. All visited districts were sent their weekly PHEM report as scheduled date of Tues day. It was seen that multi-

sectorial health emergency was not active in districts. EPRPs have found in the districts but in most cases they are not funded. For instance, of the assessed six districts in N/Gondar and S/Gondar zones, only two of them (Ebinat and L/Gayint) had allocated budget for emergency in the year 2016. Except Hamusit in E/Bellessa of N/Gondar and Wogeda in Ebinat of S/Gondar, emergency budget was not allocated. Except Wogeda HC, all visited health centers had no emergency preparedness and response plan.

Disease morbidity

Morbidity data had shown that diarrhea, pneumonia, AFI, URTI and skin diseases were the most common cause of illness in under- five children whereas AFI, Pneumonia, Malaria, Diarrhea and URTI were the leading cause of health problem in above five years age in the assessed districts.

Malaria cases were higher from June to August, but lower from September and October 2016 as compared with the same months of 2015 in G/Zuria district. In the district there was an outbreak of malaria from May to July 2016. Risk factors for Malaria and AWD were found to be apparent, so there may be epidemics in the next six months. The highest and the least number of malaria cases from May to October 2016 were reported during June and October respectively.

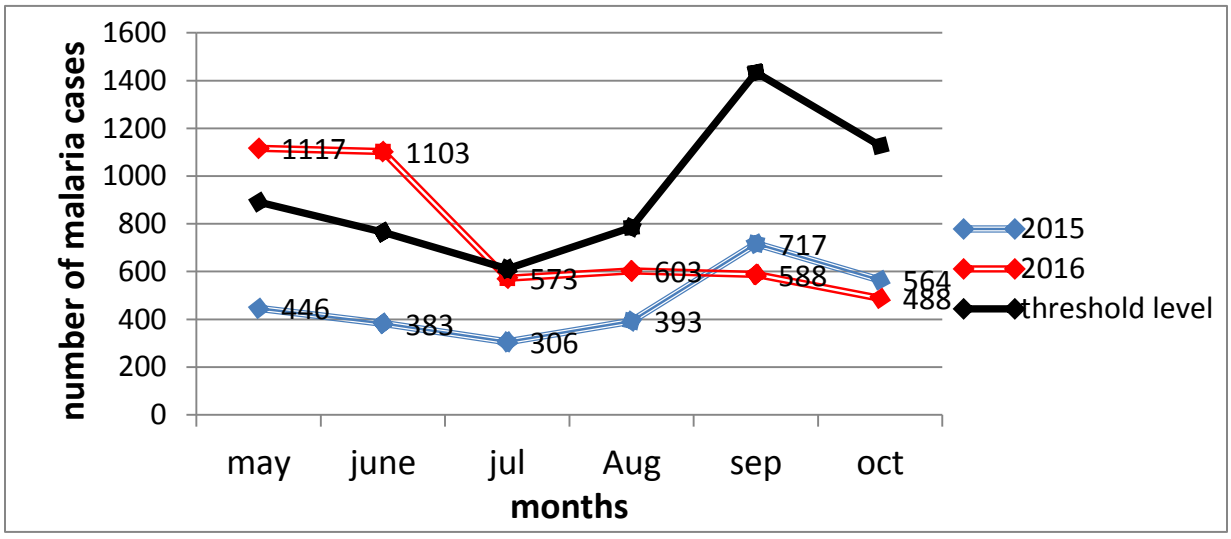

Figure 44: number of malaria case in Gonder zuria district from May to October 2015 and 2016, north Gonder, Ethiopia 2016

Malaria cases were increased in Smada district from June to August, but decreased during September and may in 2016 as compared with the same months of 2015. In the district there might

be an outbreak of malaria from mid-May to mid-July, because number of malaria cases was greater than the threshold level. The highest and the least number of malaria cases were recorded in June and July 2016 and 2015 respectively.

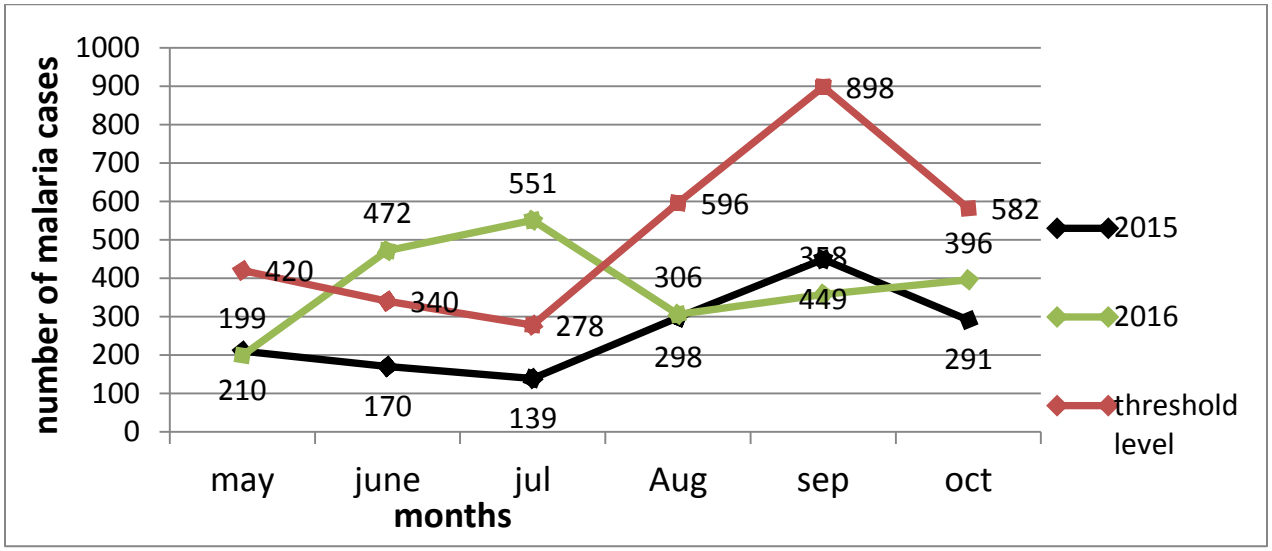

Figure 45: number of malaria cases in Smada district from May to October 2015 and 2016, South Gonder, Ethiopia, and 2016

Malaria, Dyspepsia and AFI were the most leading cause of illness in above five age groups and Pneumonia, non-bloody diarrhea and acute febrile illness were most leading causes of morbidity for under five age groups in assessed health centers . Data was not available in Arbaya health center of W/Bellessa in N/Gondar, and in Gela Matebia HC in Ebinat district of S/Gondar zone.

Emergency drugs and medical supplies

A total of 3269 OTPs and 321 SCs were providing service for malnourished cases in the region. By the 1st quarter of 2009 EFY 195 CTN F-100, 168 CTN F-75, 12254 CTN Plump nut, 13616 bottle Amoxicillin, 27 CTN Resomal and 682 tin Mebendazole supplies were distributed to treat malnutrition in the region. Findings from the RHB had shown that almost all OTPs and SCs were providing TFP and the reporting rate ranges from 80% on July to 95% on May.

Most nutritional supplies were available in all three visited district health offices for the next three months of October, November and December in each zone except Chechiho in L/Gayint of

S/Gondar zone and Hamusit in East Bellessa district of N/Gondar zone which didn‘t have adequate supplies for the coming three months of October, November and December.

It was identified that most Emergency drugs and supplies were available for one month but RDT for malaria was not available in West Bellessa district health office and health center as well RDT for meningitis in all visited health facilities. Moreover, Arbaya health center found to be poor in recording, documenting and reporting data.

Outbreak situation

There were AWD, Scabies and suspected meningitis outbreaks in the last 3 months. The finding indicated that a total of 4639 AWD cases and 35 deaths (CFR= 0.8%); 8009 scabies cases and 35 meningitis cases and 2 deaths (5.7%) were reported from the Amhara region since August 2016. However, Borena district of S/Wollo zone reported 40 suspected meningitis cases and 2 deaths. Ongoing outbreak of AWD and Scabies were reported in the region. The regional health bureau reported zero stock of emergency drugs and medical supplies. The region anticipated epidemics of malaria, AWD, scabies, measles, malnutrition and meningitis due to the risk factors being identified. S/Gondar and N/Gondar reported; 34,462 and 7041 scabies cases respectively. AWD outbreak was reported by all visited health centers in N/Gondar in the last three months (August, September and October). Hamusit, Maksegnit and Arbaya health centers reported 24; 10 and 29 AWD cases respectively. Hamusit health center also reported 945 scabies cases. However, all three visited HCs in S/Gondar had no AWD outbreak. But, Gela Matebia health center in Ebinat of S/Gondar zone reported 3022 scabies cases. Malaria and acute watery diarrhea were anticipated to occur as epidemic in all the visited health centers in N/Gondar and S/Gondar zones.

In North Gonder zone, AWD, Scabies and Measles were disease outbreaks reported in the last three months. A total of 2049 AWD cases and 18 deaths (CFR=0.9%) were reported from August 2008 to October 2009 by north Gonder zone. West Armachiho accounted 88.4% AWD reported cases and 3.5% from Wogera. This zone also reported 7041 scabies cases from areas of suffering of water shortage (E/Bellessa, W/Bellessa, Dabat and T/Armachiho). However, during the assessment there was no ongoing outbreak.

Nutrition

ARB had 55 hospitals, 836 HCs and 3336 HPs from these health facilities there were 321 SCs (38.4%) and 3,269 OTP sites. A total of 610 HWs were trained on SAM management and all HEWs were trained on SAM management during IRT training in the region.

Of the total 1,133,459 under five children screened for malnutrition in October 2016; 5,064(0.45%) and 86,906(7.7) % were SAM and MAM respectively. The percentage of GAM was 8.1%. Of the total 217,584 screened pregnant and lactating women, 63,258(29.1%) of them were reported MAM in October 2016.

Table 33: MAM, SAM and nutrition screening coverage for under- five children in Amhara region, Ethiopia, May to October 2016

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with no edema and MUAC <11 cm			# of children with no edema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children
				#SAM			#MAM		
				MUAC <11 cm	edema	Total			
May	1,372,776	1 ,205,232	88	4656	15	4671	101,724	8.8	0.39
Jun	1,372,776	1,199,366	87	4757	30	4787	97,775	8.15	0.40
Jul	1,173,765	889,073	76	3091	54	3145	64,322	7.6	0.35
Aug	1,372,776	1,079,061	79	3740	31	3771	85,551	8.3	0.35
Sep	1,372,776	1,154,818	84	4348	43	4391	86,999	7.9	0.38
Oct	1,364,852	1,133,459	83	5052	12	5064	86906	8.1	0.45

In assessed zones percentage of GAM in under -five children reported during august 2016 was the least as compared with the rest six months report. Except in July the percentage of GAM in under -five children were higher in North Gonder than South Gonder with the same months of May to October 2016.

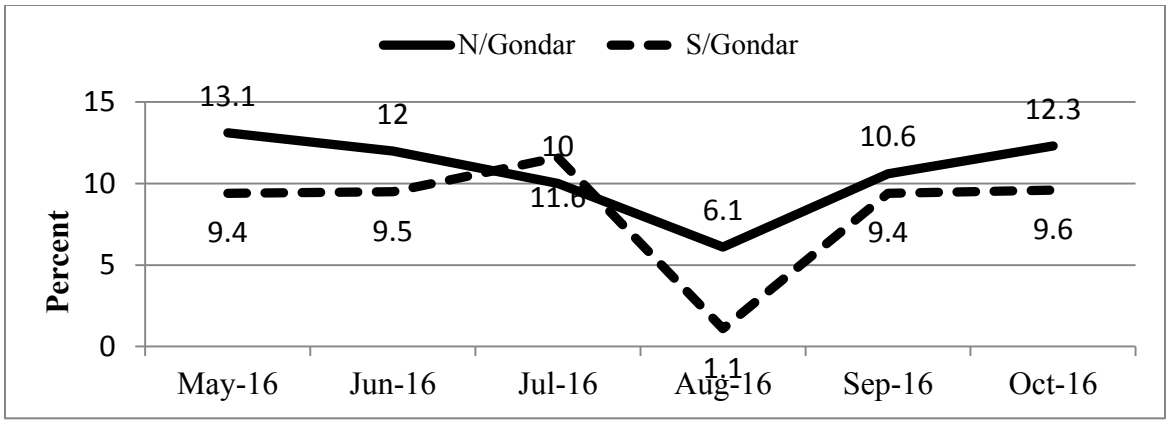

Figure 46: percentage of GAM trend for under- five children in the North and South Gonder zones, Amhara region, Ethiopia, 2016.

The percentage of GAM in pregnant and lactating women screened for malnutrition in North Gonder zone was higher than the percentage of GAM in south Gonder zone with in all the same six months of May to October 2016. Higher percentage of GAM among pregnant and lactating women screened for malnutrition from May to October was reported during the month of August 2016 in both assessed zones, and the least was in September 2016.

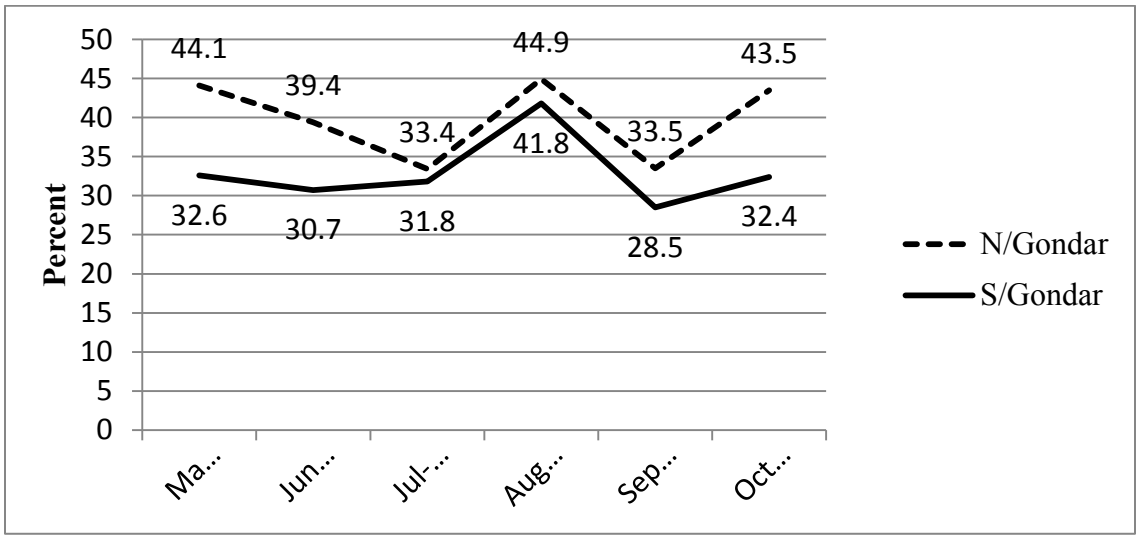

Figure 47: trend of Proxy GAM percentage from May to October 2016 for PLW in North and south Gonder zones, Amhara region, Ethiopia, 2016

Percentage of under- five children affected by sever acute malnutrition and GAM in the region from May to October 2016 were laid in the range of 0.35% to 0.45% and 7.6% to 8.8% respectively.

Among all sever acute malnourished children; the percentage of under- five children who developed oedema was 0.7%.

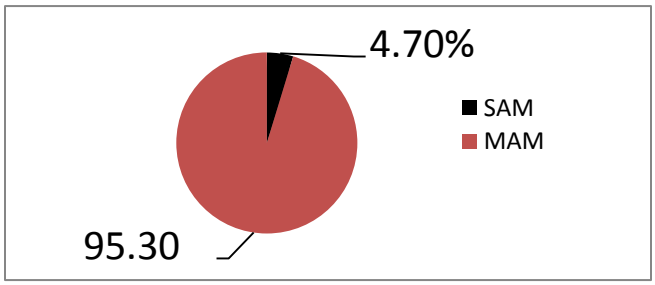

Figure 48: percentage of SAM and MAM in Amhara region, Ethiopia, May to October 2016

SAM case admission in West Bellessa was increased in 2016 as compared to 2015 of the same month from May to October. However, East Bellessa reported higher number of SAM admission in May, august, September and October 2015 than 2016 of the same months, but lower during June and July 2015.

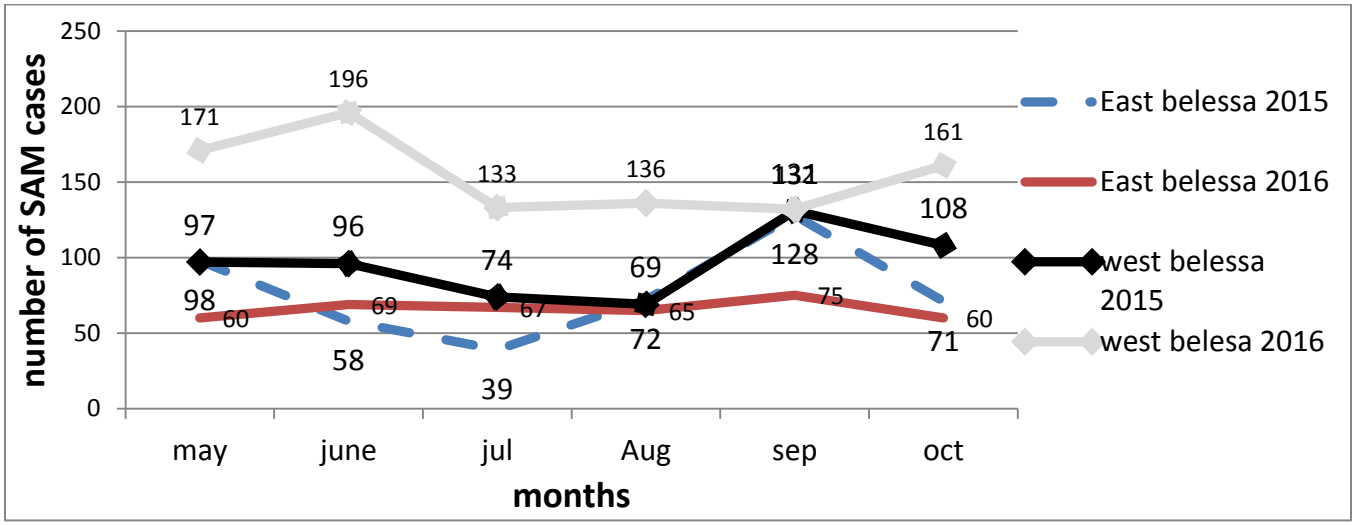

Figure 49: trend of SAM admission in 2015 and 2016 in West and East Bellessa from May to October, Amhara region, Ethiopia, 2016

The highest Percentage of GAM for under five children among screened in 2016 was in Ebinat district, the second was in East Bellessa district, the third was Lay Gayint district and the forth was Smada district among the visited districts in north and south Gonder. The highest percentage of GAM for under- five children in Ebinat was reported at the month of June, but in East bellessa it

was during May 2016. The least percentage of GAM for under- five children from visited districts was reported from Gonder Zuria in north Gonder zone, however significantly increased from August to October 2016.

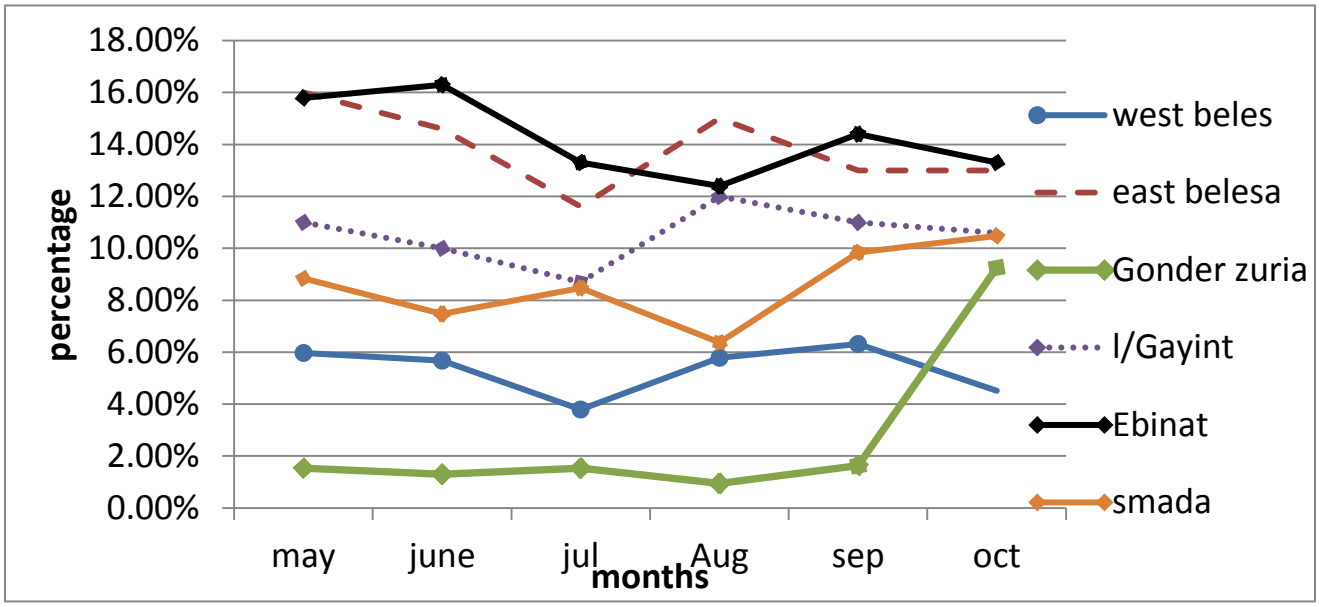

Figure 50: Percentage of GAM among screened under- five children in assessed districts, Amhara region, Ethiopia, 2016

Among visited health centers in North and South Gonder, Hamusit health center in North Gonder zone reported the highest coverage of pregnant and lactating mothers screening for malnutrition from May to October 2016 followed by Gela Matebia in south Gonder. Generally in all visited health centers the coverage of pregnant and lactating women screening for malnutrition were slightly decreased from May to October 2016. Coverage of pregnant and lactating women screening for malnutrition in visited health centers of Hamusit, Gela Matebia and Chechiho was higher than 64%, but <42% in Maksegnit and Wogeda health centers.

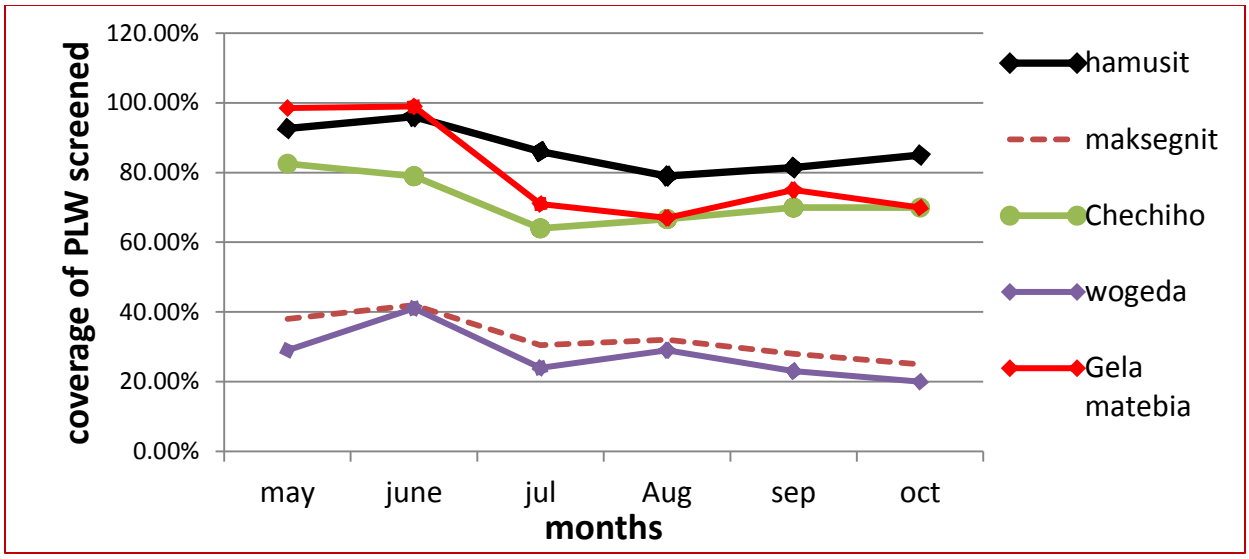

Figure 51: Percentage of GAM for PLW among visited health centers in North and South Gonder, Amhara region, Ethiopia, 2016

Disease risk factors for epidemics to occur

Malaria

Regional PHEM reported a total of 2168 kebeles in the region were malarious where 15,851,241 at risk population were living. Most parts of the region were malaria endemic due to presence of breeding sites, interrupted or potentially interrupted rivers, and unprotected irrigation in the area. LLINs and IRS coverage in the year 2016 was 98%. North Gondar zone accounted 442(37%) of risk kebeles and 2622917(33%) of risk population. North Gonder zone reported that almost 21 districts endemic for malaria where 1310 permanent breeding sites were found. LLINs and IRS coverage in 2016 were 93% and 97% respectively in North Gonder zone.

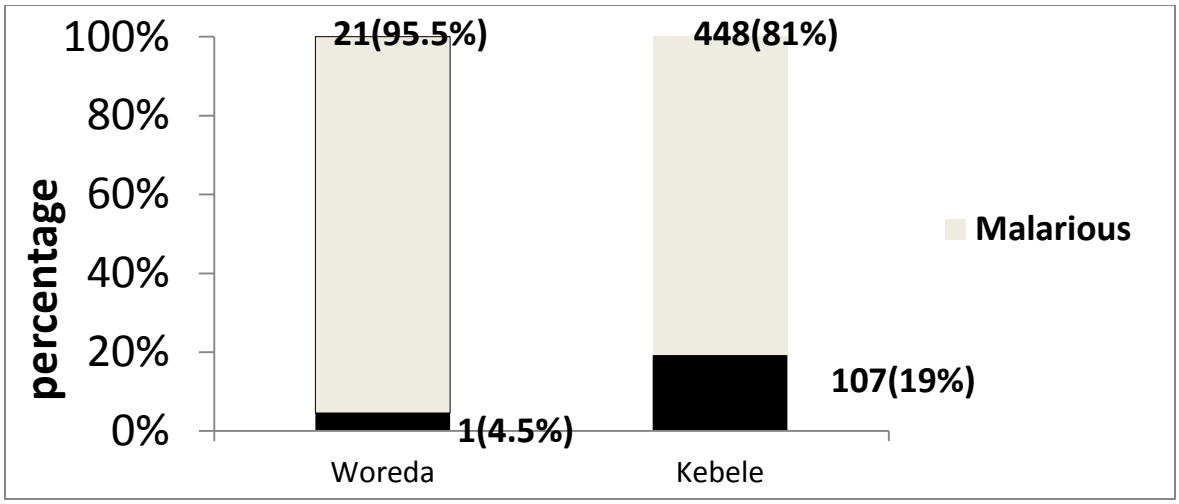

Figure 52: Percentage of malarious district and kebeles in North Gonder zone, Ethiopia, 2016

Meningitis

It was reported that there was no meningitis epidemic in the last three years in two assessed zones. Meningitis vaccination has been conducted in 2013 in the region. The data on the number of people who were vaccinated was not available.

Meningitis epidemic was reported from Borena district of South Wollo zone. Vaccination was conducted in Nov.2015 and the coverage was 98% (5,153,798 took vaccination) in the region. So the risk of meningitis epidemic might be less likely to occur.

AWD

There was ongoing AWD outbreak in some areas of the region starting from July 2016. In the region, latrine coverage, latrine utilization and safe water coverage in 2015/2016 was 77%, 96% and 64% respectively. The current history of AWD in the region, low safe water supply and low latrine coverage and utilization may trigger AWD epidemics. There was AWD outbreak reported by two visited zones in the last three months. Movement of seasonal migrant workers in four districts of North Gonder zone (Metema, W/Armachiho, Quara and Tsegedie) also increased the risk of AWD outbreak occurrence the region.

Measles

In the region there was no measles outbreak in the last 3 months (July, August and September). Measles vaccination coverage in 2015/2016 was 90% (584340) in Amhara region**.** The region conducted SIA in Nov.2015 for under -five children and a total of 1,159,110 children were vaccinated. The coverage was 99% in the SIA.

Flooding

Fogera, Dera and Libo-Kemkem districts were affected by flooding in 2016 August and July. In the affected districts a total of 91 AWD cases and 2 deaths were reported during August 2016. Other information on the number of affected people and other disaster related problems by the flood did not available.

Table 34: Emergency Drugs and Medical Supplies required for November-April for Amhara Region, Ethiopia 2016

Description	Specific items	Unit	Required	Available	Gap
Vaccines	Meningitis vaccine	Dose	1,145,217	0	1,145,217
Drugs	Coartem	Dose	1,241,321	2000	1,239,321
	Artesunate (rectal)	Dose	9775	0	9775
	Artesunate (Inj)	Vial	8880	200	8680
	Artemether IM	Vial	570	0	570
	Quinine (PO)	Dose	106350	0	106350
	Quinine (IV)	Vial	8200	0	8200
	Chloroquine 150mg of 1000 tab	Tin	617	0	617
	Ceftriaxone	Tin	12796	0	12796

	Oily CAF	Vial	6250	0	6250
	Doxycycline 100 mg 0f 1000 Caps/TIN	Tin	900	16	884
	Ringer lactate	Bag	29900	1585	28315
	ORS	Sacket	362,000	26,500	335,500
	Vit A.	Tin	934552	1476	933076
	F100	Carton	1063	49	1014
	F75	Carton	1035	54	981
Nutrition supplies	RUTF	Carton	21582	2466	19116
	Resomal	Carton	326	0	326
Laboratory supplies	RDT (Malaria) 25 test	PK	687520	3040	684480
	Pastorex	Each	250	0	250
	LP set	Each	263	0	263
	TI bottle	Each	322	0	322
Kits	CTC Kit (AWD)	Kit	60	2	58
Medical supplies	Gloves,	Each	118130	0	118130
	Syringe	Each	98380	0	98380
	PPE	Each	461	0	461

Challenges

- In active multiagency coordination forum for health at zonal and district levels.
- Difficulty to get the responsible person & complete the appropriate data during assessment.
- Poor data documentation, recording, under reporting and low quality of available data.

Conclusion

Even though emergency response string committee and rapid response team were established at all levels they were not actively conduct regular meeting. Emergency supplies were not available at all levels from the region to the lower health facilities level for rapid response of emergency. In most assessed district health offices and health centers emergency preparedness and response budget was not allocated. Malaria was occurred as an outbreak in Gonder zuria and Smada districts but not reported and investigated timely. Nutritional screening coverage in under- five children and PLW in all visited health centers and district health offices were lower. Nutritional problem was higher in under-five children and PLW in assessed zones. Anticipated epidemic of acute watery diarrhea and malaria might be occurred in the region and assessed zones.

Recommendation

Amhara regional health bureau, North Gonder and South Gonder zonal health departments and visited district health offices and health centers should strength surveillance and outbreak detection at all levels and allocates adequate emergency budget and supplies for health centers and health offices. They also should strength and improve timely distribution of emergency drugs and supplies. Multi-sectorial emergency string committee and rapid response team should conduct regular meeting at all levels. The regional health bureau, North Gonder health department, South Gonder health department and all visited health centers and districts should strength under five children and PLW nutritional screening coverage. Arbaya health center should improve data recording, documentation and reporting appropriately.

Chapter eight- Proposal for Epidemiologic Research Project

8.1. Magnitude and associated factors of HIV-Kala-azar co-infection among visceral leishmaniasis patients admitted at Metema hospital, Abdurafi MSF kala-azar treatment center, Gonder hospital and Addis Zemene kala-azar treatment center in 2015, North West Ethiopia, 2017

ADDIS ABABA UNIVERSITY, COLLEGE OF HEALTH SCIENCES

SCHOOL OF PUBLIC HEALTH

RESEARCH PROJECT PROPOSAL

Name of investigator	**Sisay Awoke**
Name of mentor	**Sefonias Getachew, Yimer Seid**
Full title of the research project	**Magnitude and associated factors of HIV-Kala-azar co-infection among visceral leishmaniasis patients admitted at Metema hospital, Abdurafi MSF kala-azar treatment center, Gonder hospital and Addis Zemene kala-azar treatment center in 2015, North West Ethiopia, 2017**
Duration of project	**6 month**
Study area	**Metema hospital, Gonder hospital, Abdurafi hospital, Addis Zemene hospital**
Total cost of the project(ETB)	**70,495**
Address of investigator	**Mobile-0931887333** **Email-sisaya16@gmail.com**

Executive summery

Back ground

Visceral leishmaniasis (also known as kala-azar, a Hindi term meaning "black fever") is caused by the L. donovani complex, which includes L. donovani and L. infantum (the latter designated L. chagasi in the New World); these species are responsible for anthroponotic and zoonotic transmission, respectively. Visceral leishmaniasis has emerged as an important opportunistic infection associated with HIV. In areas endemic for visceral leishmaniasis, many people have asymptomatic infection. More than 90% of global VL cases occur in six countries: India, Bangladesh, Sudan, South Sudan, Ethiopia and Brazil. A total of 98 countries and 3 territories on 5 continents reported endemic leishmaniasis transmission.

Visceral leishmaniasis (VL, Kala-azar) is one of the growing public health challenges in Ethiopia with over 3.2 million people at risk and estimated up to 4000 new cases per year.

Objectives

To assess the magnitude of HIV co-infection and associated factors among visceral leishmaniasis patients admitted at Metema hospital, Abdurafi MSF kala-azar treatment center, Gonder hospital and Addis Zemene kala-azar treatment center in 2015

Methods and materials

The study area will be in Amhara region from all kala-azar treatment center or hospitals which admitted visceral /kala-azar patients in Metema Hospital, Addis Zemene health center, Abdurafi Health hospital and University of Gondar Hospital. Retrospective cross-sectional study design will be conducted from jully1/2017 to august 30/2017 on patients admitted at hospital with visceral leishmaniasis in 2015. A total of 258 sample sizes will be selected by probabilistic systematic random sampling technique based on registration book as data framing. The data will be entered by Epi-info and analyzed by SPSS version 20 using multi variate logistic regressions with 95% confidence interval.

Work plan and dissemination of result

This study is planned to be completed within six months of duration. The data collection and analysis will be from July 2017 to August 2017; however it depends on the budget released time. This study results will be given to University of Addis Ababa School of public Health, Federal

Ministry of Health, Amhara Regional Health Bureau and other concerned body. They can use the findings for intervention, planning and evaluation of the programme.

Back ground

Visceral leishmaniasis (also known as kala-azar, a Hindi term meaning "black fever") is caused by the L. donovani complex, which includes L. donovani and L. infantum (the latter designated L. chagasi in the New World); these species are responsible for anthroponotic and zoonotic transmission, respectively. Visceral leishmaniasis (VL) is a vector-borne protozoan infection targeting the reticuloendothelial system [(1)]. One of the major threats to control of visceral leishmaniasis (VL) is its interaction with HIV infection. Visceral leishmaniasis has emerged as an important opportunistic infection associated with HIV. In areas endemic for visceral leishmaniasis, many people have asymptomatic infection. A concomitant HIV infection increases the risk of developing active visceral leishmaniasis by between 100 and 2320 times. In southern Europe, up to 70% of cases of visceral leishmaniasis in adults are associated with HIV infection [(2)].

Statement of the problem

VL/HIV co-infection is mutually reinforcing: HIV-infected people are particularly vulnerable to VL, while VL accelerates HIV replication and progression to AIDS. The risk of treatment failure for VL is high, regardless of the drug used, and all co-infected patients will relapse – and eventually die unless they are given antiretroviral therapy (ART). Indirect methods of diagnosis such as serological tests for VL frequently fail; direct methods such as aspirations (bone marrow, lymph node or splenic) are reliable but are invasive, require skilled microscopy, and have less value in treated and relapsing patients. Further, co-infected patients can serve as human reservoirs, harboring numerous parasites in their blood and becoming a source of infection for the insect vector.

Currently, as many as 35 countries throughout the world have reported cases of VL/HIV co-infection, although most of the published literature concerns the countries of southern Europe. Under-reporting in most endemic areas is due to a lack of facilities to diagnose one or both of the diseases and to poor reporting systems [(2)].

The phenomenon of visceral leishmaniasis and HIV (VL-HIV) co-infection is on the rise in India, Central and South America and is already a major issue in East Africa where it poses a new and difficult challenge to VL containment efforts. VL is an advanced form of leishmaniasis that occurs when this parasitic infection enters a host‘s internal organs causing significant weight loss, fatigue, and anemia and, in many cases, eventual death. As if infection by each of these

diseases were not already dangerous enough, co-infection results in a deadly synergy: HIV infection of Leishmania exposed individuals dramatically increases the risk of progression from asymptomatic infection towards full VL; and conversely, VL accelerates HIV disease progression.

There are no recent and exact estimates of the absolute number of VL-HIV co-infection cases at the global level. However, a high or increasing burden has been reported from several regions. In North-Ethiopia, 20-30% of VL cases are co-infected with HIV. Reports are increasing from Latin America; recent data from Bihar, India demonstrated co-infection rates of 3-4%. On the other hand, with the introduction of highly active antiretroviral treatment, the case load has decreased dramatically in the Mediterranean region. The risk factors for VL-HIV co-infection differ by region. In North-Ethiopia and India, VL-HIV co-infection is typically found in migrant workers [(3)].

Visceral leishmaniasis (VL), also known as kala- azar, is a neglected tropical disease caused by different species of the Leishmania parasite (L. donovani in Africa) and is transmitted through bites of phlebotomine sandflies. Large parts of Sudan and South Sudan are endemic for visceral leishmaniasis, as well as areas of Kenya, Ethiopia and Somalia. Visceral leishmaniasis is deadly if left untreated.

VL interacts with HIV/AIDS, and numerous patients are co-infected as they suffer from both diseases. The East of Africa is particularly hard hit. North-western Ethiopia has the highest burden of VL/ HIV co-infection: 25–41% of VL patients are co-infected with HIV [(4)].

More than 90% of global VL cases occur in six countries: India, Bangladesh, Sudan, South Sudan, Ethiopia and Brazil. A total of 98 countries and 3 territories on 5 continents reported endemic leishmaniasis transmission [(5)].

Visceral leishmaniasis (VL, Kala-azar) is one of the growing public health challenges in Ethiopia with over 3.2 million people at risk and estimated up to 4000 new cases per year [(6)].

Literature review

A concomitant HIV infection increases the risk of developing active VL by between 100 and 2320 times. In southern Europe, up to 70% of cases of visceral leishmaniasis in adults are associated with HIV infection. By 2001, a total of 1911 co-infection cases had been reported, with more than 50%

(1099) coming from Spain. Since 2001, new primary co-infections have been reported from Spain (122), Italy (52), France (52) and Portugal (64) [7]. Worldwide Leishmania/HIV coinfection is currently reported in 2–12% of all VL cases [8].

The reported case fatality rate for VL in Brazil in 2006 was 7.2%. In the Indian subcontinent, the focus responsible for the largest proportion of global VL cases, reported case fatality rates ranged from 1.5% (93 deaths/6224 VL cases from 2004–2008) in Bangladesh to 2.4% (853/34,918) in India and 6.2% (91/1477) in Nepal [5]. A case-control study carried out from June to December 2006 Pokot territory of Kenya and Uganda showed that low socio-economic status and treating livestock with insecticide as risk factors for VL. But sleeping near animals, owning a mosquito net and knowing about VL symptoms were associated with a reduced risk of VL [6].

Visceral leishmaniasis (VL, Kala-azar) is one of the growing public health challenges in Ethiopia with over 3.2 million people at risk and estimated up to 4000 new cases per year [7].

Retrospective hospital based study in North West Ethiopia (2013) showed that the proportion of poor VL treatment outcomes was found to be 23.7%, of which 12.4% were death, 5.7% were treatment failure and 5.6% were non-adherence [10].

In Ethiopia, 535 cases (>90%) were reported by the Médecins sans Frontières VL treatment center in Kafta Humera district, in the northwestern region of Tigray. In this highly endemic area for VL, the rate of HIV co-infection among VL patients is 15–30% [11].

Case control study in western Ethiopia (2013) showed that elevated odd of VL was associated with goat ownership (OR = 6.4; 95%: confidence interval [Cl]: 1.528.4), living in houses with cracked wall (OR = 6.4; 95% Cl: 1.625.6), increased family size (OR = 1.3; 95% Cl: 1.01.8) and the number of days spent in the farm field (OR = 1.1; 95% Cl: 1.01.2). However, daily individual activities around the home and farm fields, mainly sleeping on a bed (OR = 0.2; 95%: Cl 0.030.9), sleeping outside the house under a bed net (OR = 0.1; 95% Cl: 0.020.36)] and smoking plant parts in the house during the night time (OR = 0.1; 95% Cl: 0.010.6) were associated with decreased odds of being VL case [12].

A study conducted at Gonder Hospital, northwest Ethiopia(1999-2004) showed that out of 212 visceral leishmaniasis cases tested for HIV, 87(41.0%) were HIV co-infected and age > 20 years

was independently associated with HIV co-infection[13]. A cross sectional study conducted in North West Ethiopia (2014) which showed that the prevalence of VL-HIV co-infection was 10.4 %[14].

Conceptual frame work

Our analysis will adopt a conceptual framework, which takes into account of the hierarchical relationships between biological, social and environmental risk factors. Variables at the top in the frame work will influence the variables below them and comprises four steps, (1) Socioeconomic factors; (2) household and environmental factors; (3) behavioral factors and (4) nutritional and co-infection factors. Socio-economic factors affect a number of household and environmental factors, including crowding, household location, as well as affecting a number of behavioral factors, such as sleeping patterns and mosquito net usage. All of these factors affect host sand-fly contact. Socio-economic factors also affect nutritional status, which in turn affects disease susceptibility (VL/HIV). In addition, household and environmental factors may exert their effect through behavioral factors; for example household crowding may influence sleeping habits.

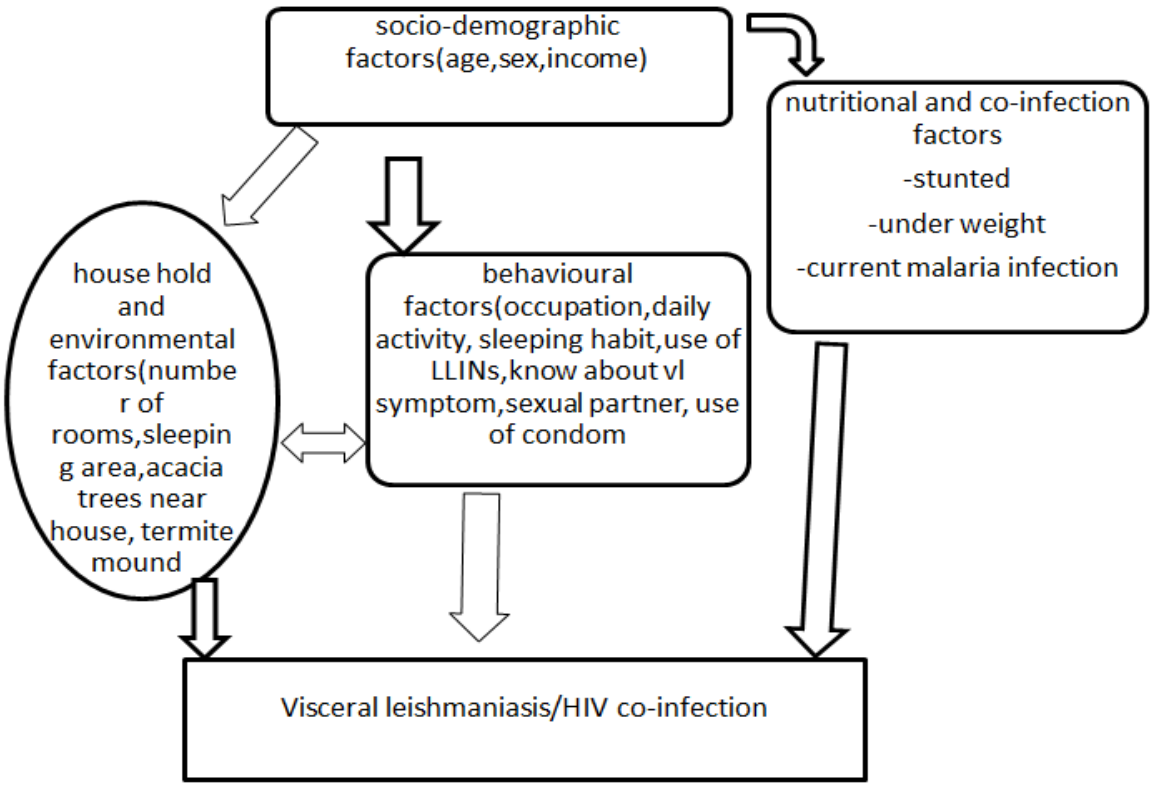

Figure 53: Conceptual frame work for visceral leishmaniasis/HIV co-infection

Rational of the study

One of the major threats to control of visceral leishmaniasis (VL) is its interaction with HIV infection. VL has emerged as an important opportunistic infection associated with HIV. In areas endemic for VL, many people have asymptomatic infection. The two diseases are mutually reinforcing: HIV infected people are particularly vulnerable to VL, while VL accelerates HIV replication and progression to AIDS. The risk of treatment failure for VL is high, regardless of the drug used, and all co-infected patients will relapse – and eventually die – unless they are given antiretroviral therapy. VL is still challenged public health problem and endemic tropical neglected disease in Ethiopia. This study will provide information about current situation of VL and HIV co-infection and risk factors associated with VL/kala-azar co-infection. This study will be also given to the concerned body to put findings into practical and to reduce public burden of VL and HIV co-infection. This research will help us to understand the magnitude of HIV co-infection and associated factors among visceral leishmaniasis in Amhara region in 2015.

Objectives

General objective

To assess the magnitude of HIV kala-azar co-infection and associated factors among visceral leishmaniasis patients admitted at Metema hospital, Abdurafi MSF kala-azar treatment center, Gonder hospital and Addis Zemene kala-azar treatment center in 2015.

Specific objective

To understand the magnitude of HIV co-infection among visceral leishmaniasis patients admitted at Metema hospital, Abdurafi MSF kala-azar treatment center, Gonder hospital and Addis Zemene kala-azar treatment center in 2015

To identify associated factors for HIV and kala-azar co-infection among patients admitted at Metema hospital, Abdurafi MSF kala-azar treatment center, Gonder hospital and Addis Zemene kala-azar treatment center in 2015

Methods and materials

Study area and population

Bahir Dar is the town of Amhara region where found 560 Km far from Addis Ababa, city of Ethiopia. Amhara region has a total of 21,131,397 populations, male and female accounted 50% equally in the region. The region has 10 zones, 3 town administration and 167 districts. The study

area will be in Amhara region from all kala-azar treatment center or hospitals which admitted visceral /kala-azar patients in Metema Hospital, Addis Zemene health center, Abdurafi health center and University of Gondar Hospital in 2015 as shown below in the map.

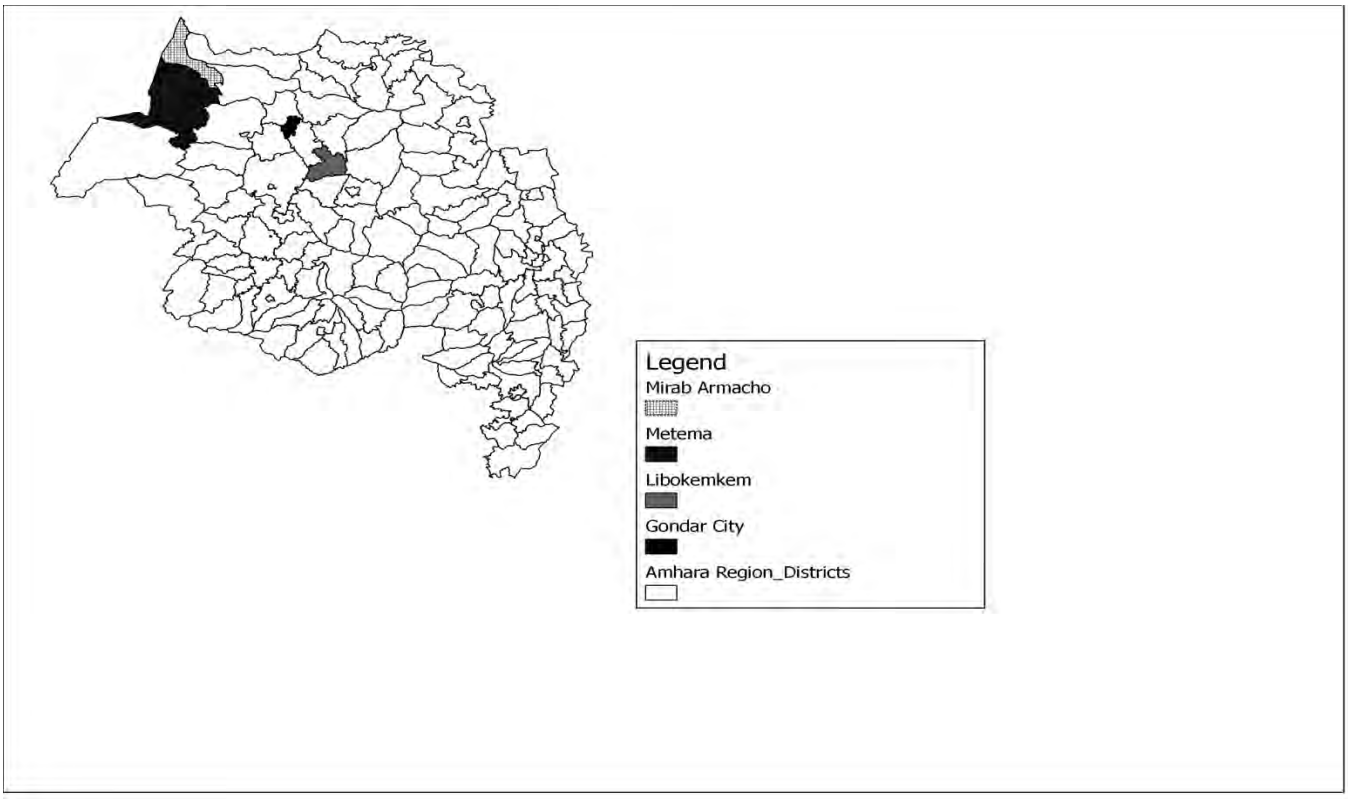

Figure 54: Map of districts in Amhara region study area, Ethiopia, 2017

Study design

Retrospective cross-sectional study design will be conducted from jully1/2017 to August 30/2017 on patients admitted at hospital with visceral leishmaniasis in 2015. All kala-azar treatment sites will be selected purposively based on high prevalence of HIV/VL co- infection annual report.

Source population

Population found in Amhara region in the study period will be our source population.

Study population

All Kala-azar patients who were admitted at Metema Hospital, Addis Zemene health center, Abdurafi Health center, and University of Gondar Hospital in 2015.

Sample size

The sample size will be determined using a single population proportion formula.

$N = Z^2 P (1-P)/ W^2$

Assumptions;

N = the number of Kala-azar patients

Z = standardized normal distribution value at the 95% CI, which is 1.96

P = The proportion of HIV/Kala-azar co- infected among Kala-azar patients, by assuming similar to a study done in Gonder hospital, North West Ethiopia, which was 41% [13].

W = the margin of error, taken as 5%

According to the above formula and assumption

$N= (1.96)^2 (0.41) (0.59)/ (0.05)^2 = 372$

By considering incomplete of data and other registration problems the sample size will be 372 and 15% of non-response rate, the final sample size becomes 428.

Sampling technique

The sample size will be selected by probabilistic systematic random sampling technique based on registration book as data framing.

Variables in the study

Dependent variables

HIV/kala- azar visceral co-infection will be our dependent variable

Independent variables

Sex, age, residency, occupation, type of treatment taken, clinical symptom, malaria, TB/Kala-azar, HIV/Kala-azar and TB/HIV/kala-azar co-infection and others will be our independent variables.

Definition of variables

HIV-/Kala-azar coinfection – A person who was positive for both VL and HIV diagnosis

Study unit

Number of individual patients admitted by visceral leishmaniasis at Metema Hospital, Addis Zemene health center, Abdurafi Health hospital and University of Gondar Hospital in Amhara region (2015) will be the study unit.

Data quality control

The data collection process will be monitored and coordinated by the principal investigator and technical advisor. One day training will also be given for health professionals for detail data collection procedures, then pretest will also be conducted before the actual study started.

Data processing and analysis

After we will check the data for its completeness and cleanness, we will collect and enter to Epi Info7 and will be analyzed by using SPSSversion20 or STATA version12. Finally, the results will be presented with tables, graphs and figures before July 2017. Descriptive statistics like rate, ratio and proportion will be calculated to measure magnitude of the disease. Each independent variable will be analyzed its association to the outcome variable by using simple logistic regression. Those independent variables with P-value < 0.2 in univariate analysis will be fitted to multiple logistic regression models to identify level of significance with response variable. Goodness of fit test will be evaluated by using Hosmer and Lemishow with P- value > 0.05 consider the model is fitted. Finally independent variables with p- value < 0.05 in 95% confidence levels will be associated and interpreted as a factor for HIV/kala-azar co-infection.

Ethical Consideration

This study will be conducted after the ethical clearance given by the research and ethics committee of Addis Ababa University, school of public health. Before start data collection each hospital must be fully and clearly informed the aim of the study and Informed consent must be obtained from hospitals. Letter of support must be also obtained from Amhara regional health bureau and Zonal health departments to collect data. Confidentiality of information obtained from the patients' registration book must be also maintained.

Dissemination of the result

This study results will be given to University of Addis Ababa School of public Health, Federal Ministry of Health, Amhara Regional Health Bureau and other concerned body. They can use the findings for intervention, planning and evaluation of the programme.

Work Plan/Time line

This study is planned to be completed within six months of duration. The data collection and analysis will be from July 2017 to August 2017; however it depends on the budget released time. The whole work plan is presented in the table1 below.

Table 35: summary for work plan

Activities	Duration of the study						Responsible body
	March	April	May	June	July	Aug	
Proposal writing							Principal investigator
Submission to Addis Ababa university school of public health							Principal investigator
Approval							Principal investigator
Budget released							Principal investigator
Training							Principal investigator
Data collection							Principal investigator and data collector
Analysis, writing and submission to advisors							Principal investigator
Final draft and submission							Principal investigator

Table 36: Budget break down

Serial no.	Title/activities	Quantity/number	Rate/item price per day	Duration of cost/number of days	Total cost (ETB)
1	Data collector nurses	10	300	10	30,000
2	Technical advisor	2	500	10	10,000
3	Field supervisor	1	500	10	5000
4	Principal investigator	1	500	20	10,000
Transport					
5	For transportation	12	400		4800
Stationaries and supply					
6	Paper A_4	2	500		1000
7	Printing and coping	500 pages	1 birr for each		500
Contingency (15%)					**9,195**
Grand total					**70,495**

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Chapter- nine additional outputs

9.1. Integrated supportive supervision (ISS) conducted at acute watery diarrhea affected districts of Mirab Armachiho and Tach Armachiho, Ethiopia,2016

Purpose of ISS

To improve and guide control measures for acute watery diarrhea in the district

To identify source of acute watery diarrhea in the district

To strengthened over all prevention and control mechanism for AWD

Methods

Discussion and meeting with district health office staffs, health workers and district emergency prevention and control string committee.

Observation of cholera treatment center and overall AWD outbreak management system in line with the guideline

Direct involvement of practical application by constructing cholera treatment center and prevention and control activities

Assessment of affected areas and population

Narrative summery of team composition

Before began our activities we discussed the magnitude, nature of the outbreak, ways of prevention and control measures which they had done in line with the guideline and main problems they faced. Based on that baseline we had brief and debrief gaps, strength and weakness ; we organized and categorized the ISS team including district staffs into different responsibility such as case management team, surveillance team, infection prevention team Logistic monitoring team and communication and mobilization team.

Activities done

Case management

Gaps identified

Health workers and physician did not follow according to national cholera treatment guideline.

They administered fluid for all suspected acute watery diarrheal patients

Doxycycline prophylaxis was given for all patients

Anti -vomiting like was given for AWD patients who experienced vomiting.

Discharge criteria and stay of days in admission were done without recommended

Poor identification of suspected AWD patients according to standard case definition

Poor registration of patient information and treatment given as well as poor follow up

Actions taken

Onsite orientation and short term training was given for health workers according to national AWD treatment guideline

We prepare printed hard copy and posted at the wall about fluid administration, recommended antibiotic dose and Oral rehydration therapy, case definition and criteria to identify level of dehydration. We also had close follow up until the above identified gaps to be corrected and improved.

Infection prevention

Gaps observed

Confused to prepare each three chlorine solutions (0.05, 0.5, and 2%) and its purpose clearly

Spraying was not done when the patient entered and discharged cholera treatment center.

Health workers were not used personal protective equipment when they managed cases.

Solutions taken

We prepared all 0.05, 0.2 and 2% solutions and we labeled them and posted chlorine preparation solution procedures and purposes after orientation had given for health workers to apply in the next when they worked accordingly.

We also had given orientation for health workers about to spray patients when they entered and discharged cholera treatment center, to use personal protective equipment and other infection prevention mechanisms according to the cholera treatment guideline.

Surveillance

We communicated daily with all focal persons worked at cholera treatment center during the outbreak and information was updated about daily situation of cases admitted, discharged and dead in CTC. Until we were in the district we analyzed AWD cases by place, person and time from 27/12/2008 to 12/1/2009 EC.

Cases by place

In the period from 27/12/2008- 12/12009 a total of 451 AWD cases were treated from three cholera treatment center, of which 200 (44.35) were treated by Terefework CTC.

Number of AWD cases by reported health facility from 27/12/2008 to 13/1/2009 EC

In West Armachiho district, Ethiopia, 2016

HEALTH FACILITY (CTC)	Frequency	Percent	Cum. Percent
Abderafi	89	19.73	19.73%
Abrhajira	162	35.92%	55.65%
Teref work	200	44.35%	100.00%
Total	451	100.00%	100.00%

Number of AWD cases by occupation from 19/12/2008 to 13/1/2009 EC in West Armachiho district, Ethiopia, 2016

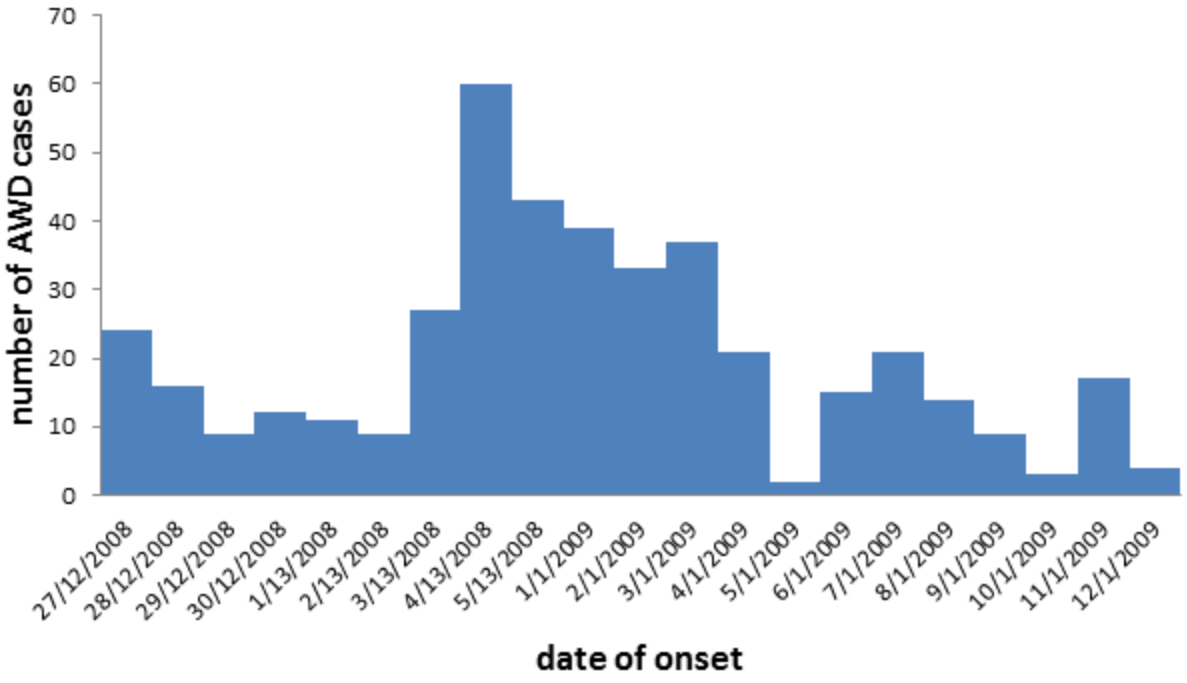
OCCUPATION	Frequency	Percent	Cum. Percent
Daily Laborer	442	98.44%	98.44%
farmer	7	1.56%	100.00%
Total	439	100.00%	100.00%

Number of AWD cases by source of drinking water from 27/12/2008 to 13/1/2009 EC in West Armachiho district, Ethiopia, 2016

WATER SOURCES (SPRING/TAP/BONO/RIVER/POND)	Frequency	Percent	Cum. Percent
River	18	4.1%	4.1%
Spring	395	89.8%	93.9%
Spring and Tap	10	2.3%	96.2%
tap	17	3.8%	100%
Total	440	100.00%	100.00%

Number of AWD cases reported by date

Occurrence of Number of AWD cases were continued for r three consecutive weeks, in second week number of cases was increased. The highest number of cases reported in 5/13/2009EC, which were 60.



Number of cases by date of onset of AWD in West Armachiho district, Ethiopia, 2016

Other activities done

Due to shortage of safe water drinking for daily laborers and community we constructed water reservoir for safe water drinking supply in collaboration with the regional health bureau, district health office and district water development office during AWD outbreak.

During constructing of water reservoir by investigator and regional health bureau staff "Ato Dagne" and other district health office staffs, west Armachiho district, Ethiopia, 2016.

Assessment and observation of source of water during AWD outbreak in Andasa district, Ethiopia, 2017

Training

We conducted and gave training for health workers from health centers and district offices and zonal health department staffs in different times on different topic during our residency.

AWD and basic PHEM training given in different locations, Amhara region, Ethiopia

Training topic	Location training conducted	Organization of health workers	Number of participants
AWD: case management, surveillance, infection prevention	**North shewa, North Gonder, south Wollo**	**Health workers from health centers, district health offices and zonal health department**	**400 health workers from different health facilities**
Basic PHEM: Meningitis, AWD	**South Wollo and AWI**	**Health workers from health centers, district health offices and zonal health department**	**200 health workers from different health facilities**

Others

During our residency we had worked and conducted integrated supportive supervision for North shewa zone, Oromia zone, South Wollo zone, North Gonder zone, and West Gojam zone at different health facilities during outbreak of AWD, scabies, Malaria and influenza.

Bulletin

With prepared weekly PHEM bulletin with collaboratively Amhara regional bureau staffs and residents as shown below.

AMHARA NATIONAL REGIONAL STATE HEALTH BUREAU

PUBLIC HEALTH EMERGENCY MANAGEMENT (PHEM) CORE PROCESS

WEEKLY PHEM BULLETIN

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Vol II-16| Week 16 April 10– April 16, 2017|

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 16 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:

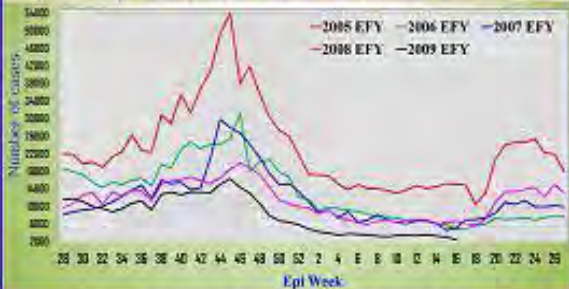
The overall completeness of the reporting units in week 16 was **97.8%**. Completeness was above 90% in all zones. As compared with the previous week, completeness was decreased in majority of the zones except Dessie and Gondar towns, N. Wollo, Oromia, W. Gojjam and S. Wollo zones. The completeness in Private health facilities was 84%.

Figure 1: Completeness by zone in week 16, 2017, Amhara region.

III. Diseases and conditions

1. Malaria: A total of 2478 malaria cases (1.2% of the total out patient cases) with positivity rate of 11.4% were reported in week 16. From the total positives, *Plasmodium falciparum Plus mixed and Plasmodium Vivax* constituted 58% and 42% respectively. The proportion of malaria cases from total cases (4.7%) was high in North Gondar zone where as proportion of Pf from total Positives (79%) and positivity rate (26%) were high in Oromia and Wag himra zones respectively. As it is shown in figure two, the total malaria cases in this week were Lower as compared with the same week of the previous four years.

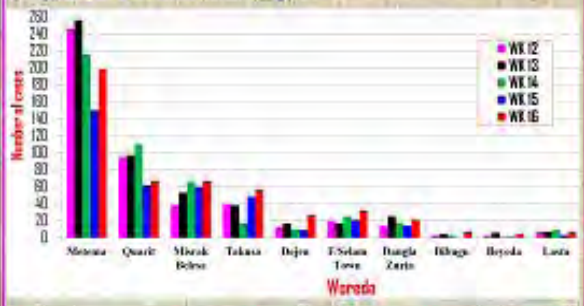
Figure 2: Regional malaria trend by week from 2005 to 2009 EFY.



Malaria Case by District (Woreda)

Regionally Number of malaria cases were decreased by 593 (19.3%) as compared with the previous week which may be due to decrement in report completeness in majority of the zones. Malaria case decrement was seen in majority of the zones except North Shewa and East Gojjam zones. From the total malaria cases reported in this week, 1025(41.4%), 382 (15.4%) and 242(9.8%) were reported from North Gondar, West Gojjam and South Gondar zones respectively. When we see the malaria cases by woreda, 47(31%) of the woredas in the region had shown case increment (from one case to 48 cases) and 81(53%) of the woredas in the region had reported case decrement (from one case to 128 cases), where as the remaining 24(16%) woredas had reported the same number of cases with the previous week. Metema, Quarit, Misrak Belesa, Takusa, Dejen, Dangila zuria and Bibugn were woredas where malaria case increment by 10% and above was seen as compared with the previous week. Top ten woredas by increment of cases in this week as compared with the previous week were presented in figure 3 below.

Figure 3: Top ten woredas with malaria case increment in week 16 as compared to week 15, Amhara Region.



Comparison of 2008 & 2009 EFY malaria cases, WK14 –WK 16

In this sub topic 2009 malaria data is compared with the same week of 2008 EFY, and 2009 malaria cases were high in Himra zone.

Table 1: 2008 & 2009 EFY malaria cases comparison by zone, Week 16

Zone	2008 Malaria cases			2009 Malaria Cases			Change from 2008 to 2009		
	Week 14	Week 15	Week 16	Week 14	Week 15	Week 16	Week 14	Week 15	Week 16
Awi	662	647	632	380	359	229	-282	-288	-403
Bahir Dar	37	36	59	20	28	12	-17	-8	-47
Dessie	8	1	3	4	3	2	-4	2	-1
E/Gojjam	306	333	301	148	139	151	-158	-194	-150
Gondar	41	69	59	23	28	18	-18	-41	-41
N/Gondar	2332	2264	2455	1471	1225	1025	-861	-1039	-1430
N/Shewa	206	156	184	113	104	105	-93	-52	-79
N/Wollo	140	132	115	82	103	57	-58	-29	-58
Oromia	190	237	266	92	115	80	-98	-122	-186
S/Gondar	1072	1492	1412	315	331	242	-757	-1161	-1170
S/Wollo	113	107	121	121	121	85	8	14	-36
W/Gojjam	794	854	1028	398	399	382	-396	-455	-646
Wag Himra	69	71	68	113	116	90	44	45	22
Region	5970	6399	6703	3280	3071	2478	-2690	-3328	-4225

NB: The red colored Numbers in the table show case increment in 2009 as compared with the same week of 2008 E.C

Annexes

Annexes 1: Questionnaire for Measles outbreak investigation

My name is ----------.I work for the Amhara regional health bureau and I am doing an investigation of measles outbreak _thepurpose of this question to get an information for public health action the information you provide will remain confidential would you be willing to participate? Thank you

Date_____

ID NO_____

Respondent: □ Patient □ Family member (Mother, Father: Brother or sister or other relatives close to patient.)

Investigators: _____, _____

Respondent's status □ Case □ Control

A. socio demography:

1. Age _____sex_____
2. Residence: Woreda _____, Kebele_____, Got_____
3. Occupation: _____
4. Religion A. Orthodox □ B. Muslim □
   C. Protestant □ D. Others □
5. Level of education

A. N/A □ B KG □ C. Primary □ D. Secondary

E. Tertiary □ F. Unable to read and write□

6. Educational level of the mother/care giver
   A. Not able to read and write □
   B. Primary □
   C. Secondary □
   Tertiary□
7. Educational level of the father/care giver
   A. Not able to read and write □ B. Primary □
   C. Secondary □ D. Tertiary □

E. Do not know □

B. Clinical manifestations (√)

1. Do you have any of the following clinical features?

A. Rash □ B. Fever □ C. Cough □ D. Conjunctivitis / red eyes □ E. Coryza /running nose □

Others Symptoms_____ _____ _____

2. Date of rash on set: ____/_____/____DD/MM/YY

3. Date seen at health facility------/-----/------ DD/MM/YY

C. About Laboratory

1. Was sample taken? A. Yes □ C. No □

2. Date of collection of blood sample: _____

3. Date of specimen received by referral lab_____

4. Did result reported? A. Yes □ B. No □

5. If yes, is it A. Positive □

B. Negative □

C. Intermediate□

D. Immunization History

1. Did he/she/you vaccinated against measles? A. No □ B. Yes □

2. If yes; could you tell me the date of last measles vaccination/observe card _____

3. Number of dose received: _____

4. If your answer is no for question 1 what is the main reason that you/your child not vaccinated

A. The health facility is far □

B. I do not know the time of vaccination □

C. The vaccine will hurt me /my child □

D. The child is not yet 9 months □

E. The vaccine does not prevent measles □

F. Other specify ----------

5. We‘re/ was he/she/you ever been sick with such diseases A. Yes □ B. No□

6. If yes when -------/----------/--------- DD/MM/YY

E. Exposure

1. Have you moved anywhere during 7-21 days prior to rash onset? A. Yes □ B. No□

2. If yes, Where_____

3. Did the patient exposed with other similar case? A. Yes □ B. No□

4. If yes; where? _____ When? _____who was the patient _____

F. Transmission to others

1. Have you moved Some where four days prior to rash onset or four days after rash onset?

A. Yes □ B. No□

2. If yes where _____

3. Is there other case in the neighborhood? A. Yes □ B. No□

4. If Yes, Who is He /She _____?

5. Are there other cases within the household? A. Yes □ B. No□

6. If Yes, how many? _____

7. Where does the patient work/study? _____.

8. Are there other cases in the workplace/school A.? Yes □ B. No□

9. Where does the patient socialize (market, church, club, school, other

_____?

G. complications

1. DO you have any of the following complications if the respondent is a case?

A. Diarrhea A. Yes □ B. No □

B. Ear infection A. Yes □ B. No □

Blindness /change in vision A. Yes □ B. No □

C. Convulsion A. Yes □ B. No □

D. Pneumonia (cough, chest pain, SOB) A. Yes □ B. No □

E. Mouth ulcers A. Yes □ B. No □

2. Nutritional status

A. MUAC---------

B. Bilateral edema A. Yes □ B. No □

Annexes 2: Questionnaire for influenza like illness

Patient Name_____ Code____ date of Data collection_____

Woreda_____ kebeles_____ Got_____

I. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex	1.Male 2.Female
1.2	Age	Years, ____Months_____
1.3	If female, is she currently pregnant?	1.Yes 2. No 3.Do not know
1.4	Occupation	
1.5	Educational level	
1.6	Marital status	
1.7	Family size	----------
1.8	Is there any sick person with fever, cough , headache , running nose/vomiting <1 week (Illness) family	1. Yes 2. No
1.9	If yes, number of sick person	----------
1.10	Specimen taken	Yes No

II. Clinical History of Diseases:

2.1	Case status		1.case 2. Control if the answer is 2 go to question No.3.1
2.2	Date of illness on set		----------(dd/mm/yy)
2.3	Date seen at health facility		
2.4	Date of Admission if Inpatient		----------(dd/mm/yy)
2.5	What was the symptom?	Cough 2.Fever 3.Sore throat	Sneezing Chest pain Joint pain

		4.Shortness of breath 5.Difficulty in breathing 6.Vomiting 7.Diarrhea	chills Headache .Other (Specify
2.6	Did you take treatment?		1.Yes 2.No
2.7	Outcome		1.cure 2. improved 3.died 4.Referred 5.on treatment

III. Risk factors

3.1	Did you have any travel history 7 Days to areas with active influenza like illness cases before onset of symptoms?	1.Yes 2. No
3.2	Do you have any contact history with Someone else with suspected or confirmed Flu patient(s)?	1.yes 2.No
3.3	Do you have any contact history with sick or dead animals (wild or domestic):	1. Yes 2. No
3.4	2. Did you wash your hands after touching the dead animals and birds?	1.Yes 2.No 3.Unknow
3.5	was there death of birds/chicken in the kebeles	Yes No
3.6	Is your house well ventilated?	1.Yes

		2.No 3. other
3.7	Did you have participated at the wedding ceremony?	1. Yes 2. No
3.8	Did you have eaten or drunk at the wedding?	I. Yes 2. N0
3.9	Number of windows	
3.10	How many times do open windows per week	

Knowledge of patient on influenza like illness

1	Do you hear about influenza like illness?	1.Yes 2.No
2	From whom did you heard	1.Friends 2.Family member 3 HEW 4 Teacher 5. Health workers 6. other_____
3	Do you know the causes influenza like illness?	1.Yes 2.No
4	If Yes? What it is?	1.virus 2.bacteria 3.contaminate food 4.from God 5. related to weather condition 6.Don‘t know 6.Others (Specify) _____

5	What are the Signs and symptoms of influenza like illness?	1.cough 2.Fever 3.Headache 3. nasal discharge 4.fatigue 5. Chills 6. chest pain e) 7. vomiting 8.diarrhea 9. Loss of appetite 10.Don‘t know
6	How do you think this disease transmit from person to persons (none proving)?	1. sneezing/coughing 2.Contact with patient 3.wind 4. Don‘t know 5.Other(specify)
7	What are the prevention methods of ILI?	1.limit your contact with others 2. hands washing 3. Cover mouth and nose during coughing and sneezing? 4. Don‘t touch any dead poultry 5. Hot fluid drinking 6. Don‘t know 7.other specify----------

Annexes 3: Questionnaires for surveillance system evaluation

Zonal level questionnaire

Identifiers:

Region _____ Respondent_____

Zone _____Date _____Tele._____

General

Total pop._____ Male _____ Female_____u5yrs_____

Rural pop._____ urban pop._____

Total Kebeles _____ Urban _____ Rural _____

Hosps._____ H.Cs_____ Hps_____ All types of private clinics ____

Other private health facility _____ NGOs H.F._____

Total # of malarious Woreda _____Total # of malarious kebeles___ ____Total pop at risk for malaria _____

I. Availability of a National Surveillance Manual

1. Is there a national PHEM manual/ guideline for surveillance? Yes / No
2. ***If yes***, describe (last update, diseases included, case definitions, surveillance and control, integrated or different for each disease):

   _____
3. What are the objectives of surveillance? _____
4. What are the strengths of your surveillance system? _____

II. What are the weaknesses of your surveillance system?

III. Case Detection and Registration

5. Do you have standard case definitions for the Country‘s priority diseases like AFP (polio), malaria, and measles? Yes / No / Unknown / Not applicable

6. If the answer is yes for Q #6, observe the presence of the standard case definition for each priority disease. Yes No Unknown Not applicable

IV. ***Data reporting::***

Presence of recommended reporting forms in the zone at all times over the past 11 months

7. Are the Federal/ Regional health bureau responsible for providing surveillance forms to the health facilities? Yes No Unknown Not applicable
8. ***If yes***, have you lacked appropriate surveillance forms at any time during the last 11 months? Yes No Unknown Not applicable
9. What are the reporting entities for the surveillance system?
    a. Public health facilities
    b. NGO health facilities
    c. Military health facilities
    d. Private health facilities

Others_____

10. Was there any report of the immediately reportable diseases in the past 1 month? Yes/ No What was the disease_____?
11. If yes, for Q 11, with in what time is the report received after detection of the diseases?
    a. Less than 1 hour
    b. 2-24 hour
    c. 1- 2 days
    d. 3- 7 days
    e. After 1 week
12. Percent of districts that have means for reporting to next level by e-mail, telephone, fax or radio_____
13. How do you report weekly, monthly and other formations to higher level?
    a. Mail
    b. Fax
    c. Telephone
    d. Radio
    e. Electronic

f. Other

14. Did you have address of regional PHEM officers? Yes /No
15. How frequently are you communicating with the regional PHEM officers on emergencies and other daily activities?

A) Daily

B) Weekly

C) Every 2 week

D) Monthly

E) Quarterly

F) Every 6 month

G) Yearly

H) Others_____

16. Did you have address of woredas/health facility PHEM officers? Yes/ No (if yes observe the lists and their address of woreda and H.F PHEM officers)
17. How frequently are you communicating with the woredas/health facility PHEM officers on emergencies and other daily activities?

A) Daily

B) Weekly

C) Every 2 week

D) Monthly

E) Quarterly

F) Every 6 month

G) Yearly

H) Others_____

18. When are you expected to send weekly report to the Regional PHEM unit? Every

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

☐ Sunday

☐ I don‘t know

19. When are you expected to receive weekly report from woredas /health facilities?

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

☐ Sunday

20. ☐ I don‘t know 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

21. ☐ Others---------- 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

22. If answer for Q 22 is yes to whom did you send?

23. If you faced any problems on communicating and reporting, list them_____

V. How do you manage the problem you faced?

VI. ***<u>Data analysis</u>***

1. Have 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 (if yes observe any documents)
4. How many woredas have permanently assigned surveillance officer or focal person? ___
5. How many of them trained on surveillance and epidemic management? _____
6. If Q #4 is no, how surveillance activates were done at woreda level? _____
   _____
7. Was data compiled and registered? Yes/ No (if yes observe documents)
8. Did you have computer on your department (PHEM unit)? Yes/ No
9. What is the data entry and compilation instrument?
   A) Manual
   B) Computer
10. Other_____Did you have computer skill on A) MS word B)MS excel C)MS power point D) Epi-info
11. Did you analyze data of the surveillance system (cased based, routine, outbreak ….)?Yes/ No
12. If answer for Q 11 is yes, observe whether or not data is analyzed by time, place and person
13. If you analyze surveillance data how frequently? A) weekly B) every two week C) Monthly D)quarterly E) every 6 month F) annually G) No regular time
14. Did you perform trend analysis for priority diseases? Yes/ No
15. If yes for Q #10, observe and list the diseases which has line graph
    _____
16. Did you have denominators for data analysis? A) T. population B) male C) female D) U5 E) pop. By woreda E) hard to reach area pop.
17. Did you notify the results of your analysis to the higher level PHEM? Yes/ No
18. Did you notify the results of your analysis to the lower level PHEM? Yes/ No
19. If answer for Q #18 is No, what is the reason?
    ☐ Lack of knowledge
    ☐Shortage of time

☐Less attention to data analysis

☐ Shortage of materials

☐Analysis is not familiar

☐ Negligence

☐ Other----------

VII. Outbreak Investigation

1. How many outbreaks were occurred in 2008 EFY? _____
2. How many of them were investigated _____list the diseases

   _____
3. Did you have outbreak investigation check list? Yes/No
4. If the answer no for Q #3, how did you know possible factors for the outbreak?

   _____
5. Where was laboratory confirmation of cases done?

   ☐Regional laboratory

   ☐ Hospital

   ☐EHNRI

   ☐ Health center

   ☐Contracted private laboratory

   ☐ Other----------
6. Who was responsible to investigate an outbreak? ☐ rapid response team ☐ HEW ☐ staffs of woredas health office ☐ experts organized randomly ☐ health facility staffs

   ☐ other_____
7. Fill the table below for question #2

S.N^{O}	Name of outbreak	Place(Kebele /woreda	N^{O} of cases			N^{O} of deaths			Start date of the outbreak	Investigation date	Remark
			M	F	U5	M	F	U5			
1											

2											
3											
4											

8. Had you faced any challenge in outbreak investigation in 2008 EFY? Yes/No
9. If answer for Q 8 is yes, a) list the challenges_____

   _____

   b) List the alternatives that you take to tackle the challenges._____

VIII. Epidemic preparedness(relevant for epidemic prone diseases)

1. Did you have plan for epidemic response and preparedness? Yes/No (if yes observe)
2. Was there an emergency stock of drugs and supplies at all times in the past 1 year (2008)? Yes/ No (if yes observe any document for evidence)
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 established at zonal level? Yes/No
6. Did the epidemic management committee have regularly scheduled meeting time? Yes/No(if yes observe minute book)
7. How many woredas are established epidemic management committee and meet regularly? __
8. Was Rapid response team established at zonal level? Yes/No
9. Did the Rapid response team have regularly scheduled meeting time during epidemics? Yes/No (observe minute book or other document)
10. How many woredas have established Rapid Response Team? _____
11. Did you have case management protocol for epidemic prone diseases? Yes/No/Not applicable (check)
12. Do have multi sectorial emergency preparedness and response task force committee? Yes/ No/ Not applicable
13. In what frequency did the task force meet during outbreaks? _____
14. Were partners working together with your office on emergencies ?Yes/No

15. If answer for Q 14 is yes, what type of supports did they give to your office?

    _____

    _____

16. Was there a budget for epidemic response in the last year (2008)? Yes/No
17. Had you a car assigned for emergencies (PHEM)?Yes /No/Not functional
18. If answer for Q 17 is NO, how did you address emergencies?

    _____

    _____

19. Had you faced any Challenges on epidemic response and preparedness in 2008 EFY ?Yes/No
20. If answer for Q 19 is yes,
    a) List the challenges
    b) What measures did you take to tackle the challenges?

IX. Response to epidemics

1) Did the zonal health office respond for epidemics within 48 hours of notification of most recently reported outbreaks? Yes /No (observe any documents)
2) Are epidemic management committees evaluating their epidemic preparedness and response activities during the past year (2008)? Yes/No (check written document)

X. Supervision and Feedback

1. Did you have supervision plan in 2008 EFY? Yes/No(check documents)
2. If answer for Q1 is No, how did you supervise? _____

   _____

3. If Q #1 is yes, did you supervise the woredas and health facilities? Yes/No
4. If Q #3 is No, what is the reason? _____
5. If Q #3 is yes, how many times did you supervise each woredas and health facilities in 2008 EFY? Woreda----------. Health facility----------
6. Had you received supervision from regional PHEM unit or FMOH in the last 11 months or 2008EFY? Yes /No
7. If Q #6 is yes, how many times in 2008 EFY? ----------
8. Did you have regular supervision checklist? Yes/No

9. If Q #8 is No, how did you supervise the woredas and health facilities?

   _____

10. Did you send feedback of your supervision findings to the woredas and health facilities which commenting/indicating their strong and weak sides? Yes /No(check)
11. If Q #10 is No, why? _____
12. If answer for Q #10 is yes, for how many woredas and health facilities and sessions did you send a feedback in 2008 EFY? Woreda_____ health facilities_____
13. Had you received feedback from higher level supervisors in the last 11 months or 2008EFY? Yes/No
14. If Q #13 is yes, how many feedbacks did you received in last 11 months or 2008 EFY?

    _____

15. Did you conduct active case search for health facilities in last 11 months or 2008EFY? Yes/No, if yes, how many times and for how many woredas and health facilities? _____ did woreda PHEM officers also conducted? Yes/ No (observe the document)
16. What did you get from active case search _____
17. Had you faced any challenge on supervision and feedback in the last 11 months? Yes / No
18. If answer for Q #15 is yes, a) list the challenges._____

b) List the measures that you take to tackle the challenges

_____

IX. Resources

Percent of sites that have:

26. Data management

Computer

Printer

Photocopier

Data manager

Statistical package

27. Communications

Telephone service Fax Radio call Satellite phone

Budget line _____

28. Logistics _____

XI. Surveillance

29. Do you have a computerized surveillance network at this level? Yes/No/Not applicable

Budget for surveillance

30. Is there a budget line for surveillance in the zonal Health office budget? Yes/No Not applicable
31. ***If yes***, what is the proportion: %
32. How could surveillance be improved?

Questionnaire for Attributes and level of Usefulness:

1. Total population under surveillance_____ 2016/2008
2. What is the incidence / Prevalence of 2016/2008 ----------in your area/region
    - Malaria_____ laboratory done _____cases P.F _____P.V____ Deaths _____
    - Dysentery _____cases _____Deaths _____

I. Level of Usefulness of the Surveillance System for these selected priority diseases

Does 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 these diseases, including identification of factors associated with these diseases? Yes/ No
3. Permit assessment of the effect of prevention and control programs? Yes/ No

Observe (confirmation):

1. interventions and diseases trends analyzed ---Available //Not available

II. Describe Each System Attributes:

1. **Simplicity:**
2. Is the case definition of the priority diseases (malaria, measles, pandemic influenza, and dysentery….) easy for case detection by all level health professionals? Yes/ No

3. The surveillance system allows all levels of professionals to fill data? Yes/No
4. Does the surveillance system help to record and report data on time?
5. Does the surveillance system (Reporting format) have necessary information for investigation? Yes/No
6. How long it takes to fill the format? a, <5 minute b, 10-15 minutes c, >15 minutes
7. How long does it take to have laboratory confirmation of
    A. Dysentery
    B. Malaria
    C. Others _____

Flexibility:

2. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? Yes/ No
3. Do you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement? Yes /No

   Comment:_____

   _____
4. Is the system easy to add new variables? Yes /No
5. Is the surveillance system easy to integrate with other systems? Yes /No
6. Is the surveillance system easy to add new disease on report? Yes /No
7. Is the system easy to add new information technology? Yes /No

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 including all private clinics)? __/__

3) If No for Q #1, 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:_____

_____

F. Were all participants using the standard case definition to identify cases? Yes/ No

G. If yes, What is your evidence _____

H. Were all the reporting agents send their report using the current and appropriate surveillance reporting format? Yes/ No (if yes observe the documents)

I. Were all the health professionals aware about the surveillance system? Yes/No (if yes how they awared)

Data Quality: (Completeness of the reporting forms/and validity of the recorded data)

1. Are the reporting site / data collectors trained/ supervised regularly? Yes/No
2. **Observe:** Review the last months report of these diseases
   a) Average number of ***unknown or blank responses*** to variables in each of the reported forms

      _____

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

      _____
3. Are all woredas reporting (including late report)?☐ Yes ☐ No
4. Percent of woredas that send report of each week the last 11 months in 2008 EFY. ----------
5. Are all hospitals reporting? ☐ Yes ☐ No
6. Percent of hospitals that send report of each week the last 11months in 2008 EFY. --------

Total weekly reports received from woredas/Hospitals (including late reports, from July 2015-may, 2016)

WHO epid. wk	N^{O} of woredas expected to report	N^{O} of woredas that report (including late report)	N^{O} of Hospitals expected to report	N^{O} of hospitals that report (including late reports)	WHO epid. wk	N^{O} of woredas expected to report	N^{O} of woredas that report (including late report)	N^{O} of Hospitals expected to report	N^{O} of hospitals that report (including late reports

Representativeness:

7. What is the health service coverage of the district/ zone/ region? _____%
8. What is the health service utilization of zone? _____%
9. Do you think, the populations under surveillance have good health seeking behavior for these diseases? Yes / No
10. Was the surveillance system enabled to follow the health and health related events in the whole community? Yes /No
11. If answer for Q 12 is no,who do you think is well benefited by the surveillance system? ☐ The urban ☐the rural ☐both
12. If yes for Q 12, do you think that rural and urban communities are equally benefited in surveillance system? Yes/ No , if no why _____
13. Are all the Socio demographic variables included in the surveillance reporting format? Yes /No
14. If the answer for Q 7 is No, which a) Sex---------- b) age group---------- C) ethnic group----- d) religion---------- is less represented?

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 if yes what was it and how do you solve it_____
3. Was there any time /condition in which the surveillance is not fully operating? Yes/ No
4. If the answer yes for Q #3 When/what is the condition that talks the system not to function properly?----------
   ----
5. Is there a surveillance officer or focal person (PHEM unit)? Yes/No Number _____

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. ----------

Weekly Zonal reports received on time in the last 11 months in 2008 EFY report (July 2015- May, 2016) How

WHO epid wk	N^{O} of woredas expected to report	N^{O} of woredas that report on time	N^{O} of Hospitals expected to report	N^{O} of Hospitals that report on time	WHO epid wk	N^{O} of woredas expected to report	N^{O} of woredas that report on time	N^{O} of Hospitals expected to report	N^{O} of Hospitals that report on time

do you work with other departments and other sectors? _____

DISTRICT (INTERMEDIATE LEVEL) QUESTIONNAIRE

Region_____ **Zone** _____

Woreda _____**Name of respondent**_____

Tele_____ **Date**_____

General

XII. Availability of a National Surveillance Manual

1. Are there a national Phem manual/ guideline for surveillance system?
   Yes /No/ Not applicable / Unknown
2. ***If yes***, describe (last update, diseases included, case definitions, surveillance and control, integrated or different for each disease):

   _____

   _____What are the objectives of surveillance? _____
3. What are the strengths of your surveillance system? _____

   _____
4. What are the weaknesses of your surveillance system? _____

   _____

XIII. Case Detection and Registration

1. Do you have standard case definitions for the Country's priority diseases like SAM, dysentery, malaria, and measles……?
   Yes / No / Unknown / Not applicable
2. If the answer is yes for Q #1, observe the presence of the standard case definition for each priority disease. Yes No
3. If answer for Q1 is No, for which disease(s) did you lack the case definition? _____

   _____

XIV. *Data reporting::*

4. Are the Federal/ Regional health bureau responsible for providing surveillance forms to the health facilities? Yes No Unknown Not applicable
5. ***If yes***, have you lacked appropriate surveillance forms at any time during the last 11 months? Yes No Unknown Not applicable
6. What are the reporting entities for the surveillance system?

a. Public health facilities
b. NGO health facilities

c. Military health facilities

d. Private health facilities

e. Others_____

7. Was there any report of the immediately reportable diseases in the past 1 month? Yes/ No
8. If yes, for Q 7, with in what time is the report received after detection of the diseases?
    a. Less than 1 hour
    b. 2-24 hour
    c. 1- 2 days
    d. 3- 7 days
9. After 1 week Percent of health facilities that have means for reporting to next level by e-mail, telephone, fax or radio_____
10. How do you report weekly, monthly and other formations to higher level?
    a. Mail
    b. Fax
    c. Telephone
    d. Radio
    e. Electronic
    f. Other
11. Did you have address of Zonal PHEM officers? Yes /No
12. 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

13. ☐ Others----------Did you have address of HC/HP PHEM focal persons? Yes /No
14. 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----------

15. Did you have case based reporting formats for outbreaks ?Yes /No ☐ Not Applicable
16. Was there guide line for specimen collection, handling and transportation to the next level? Yes/No ☐ Not Applicable
17. Did you have line list for reporting outbreaks? Yes/No ☐ Not Applicable
18. Did you face shortage of surveillance reporting and recording formats? Yes/ No
    If yes, which form _____
19. When are you expected to send weekly report to the Zonal PHEM unit?

☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday☐ I don‘t know

20. When are you expected to receive weekly report from HCs/HPs?

☐ Monday ☐ Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday

☐I don‘t know

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

22. 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
23. If answer for Q9 is yes to whom did you send? _____

    _____
24. If you faced any problems on communicating and reporting, list them_____

    _____
25. Mention the alternative solutions that you take to tackle the problems you listed on the above? _____
26. Do you have assigned surveillance officer for PHEM activities and working on? Yes /No
    If no, who is responsible for PHEM activities? _____
27. If yes for Q 27, did he train on surveillance system?☐ Yes ☐ No
28. If answer for Q 27 is yes a) when---------- b) Topic----------c) For how long? -------
29. Did you conduct any onsite training / orientation about surveillance system for the HC and HP PHEM focal persons? yes/No
30. Was data compiled? Yes /No
31. Did you have computer on your office? Yes/No
32. Did you have computer on your department (PHEM unit)? Yes /No
33. What is the data entry and compilation instrument? ☐ Manual ☐ Computer ☐ other----------
34. Did you have computer skill on ☐ MS word ☐MS excel ☐MS power point ☐ Epi-info
35. Did you analyze the data collected from surveillance system? Yes /No
36. If answer for Q 35 is yes, did you described data by, ☐ time ☐ place ☐ person
37. If yes for Q 36, for which disease _____
38. Did you have denominators for data analysis? ☐ total population ☐ male ☐ female ☐ under five
39. Please indicate the frequency of your data analysis.
    ☐ Weekly
    ☐ Every two week
    ☐ Monthly

☐ Quarterly

☐Every 6 month

☐ Annually

☐ No regular time

40. Did you notify the results of your analysis to the higher level PHEM? Yes/No
41. Did you notify the results of your analysis to the lower level PHEM? Yes/No
42. If answer for Q 38 is No, what is the reason?

☐ Lack of knowledge

☐ Shortage of time

☐ Less attention

☐ Shortage of materials

☐ Analysis is not familiar

☐ Negligence

☐ Other----------

43. How can report system be improved?

_____

_____

44. Do you have an action threshold for any of the country priority diseases?

Yes No I don‘t know

45. ***If yes,*** what is it? _____cases _____% increase _____rate

(Ask for 2 priority diseases)_

I. ***Epidemic preparedness***

46. Did you have plan for epidemic response and preparedness? Yes/No
47. Did you have emergency stocks of drugs and supplies? Yes/No
48. If answer for Q 47 is No, how did you control epidemics? _____
49. Had you experienced shortage of drugs, vaccines and supplies in last 11 months in 2008 EFY? Yes/ No
50. Was woreda epidemic management committee established? Yes /No
51. Did the epidemic management committee have regularly scheduled meeting time? Yes/No

52. Was Woreda Rapid response team established? Yes /No
53. Did the Rapid response team have regularly scheduled meeting time during epidemics? Yes /No
54. Did you have case management protocol for epidemic prone diseases? Yes /No
55. Did your PHEM have multi sectorial emergency preparedness and response task force committee? Yes /No
56. In what frequency did the task force meet during outbreaks? _____
57. Were partners working together with your office on emergencies? Yes /No
58. If answer for Q 57 is yes, what type of supports did they give to your office? _____

    _____
59. Was there a budget for epidemic response? Yes /No
60. Had you a car assigned for emergencies (PHEM)? Yes /No Not functional
61. If answer for Q 60 is NO, how did you address emergencies? _____

    _____
62. Had you faced any Challenges on epidemic response and preparedness in the last 11 months in 2008 EFY? ☐ Yes ☐ No
63. If answer for Q62 is yes, a) list the challenges_____

    b) What measures did you take to tackle the challenges? _____

II. Outbreak investigation

64. Had you investigated any outbreak in the last 11 months in 2008 EFY? Yes/No
65. Did you have outbreak investigation check list? Yes / No
66. If answer for Q64 is No, how did you know possible factors for the outbreak? ----------
67. Where was laboratory confirmation of cases done?

☐Regional laboratory

☐ Hospital

☐ EPHI

☐ Health center

☐Contracted private laboratory

☐ Other----------

68. Who was responsible to investigate an outbreak?

☐ Rapid response team

☐ HEWs

☐Staffs of woreda H.O

☐ Experts organized randomly

☐ Health facility staffs

☐ Other----------

69. If answer for Q 64 is yes how many out breaks did you investigated in 2008 EFY? ____

S.N^{O}	Name of out break	Place(Kebele/woreda	N^{O} of cases			N^{O} of deaths			Start date of the out break	Investigation date	Remark
			M	F	U5	M	F	U5			
1											
2											
3											

70. Had you faced any challenge in outbreak investigation in the last 11 months in 2008 EFY?

Yes/ No

71. If answer for Q70 is yes, a) list the challenges_____

b) List the alternatives that you take to tackle the challenges._____

III. Responses_____

72. Has the district implemented prevention and control measures based on local data for at least one reportable disease or syndrome?

Yes /No Unknown/ Not applicable

73. Does the district responded within 48 hours of notification of most recently reported outbreak (from written reports)

Yes No unknown not applicable

74. Does the district achieved an acceptable case fatality rate for most recent outbreak (Observe from outbreak report)

Yes No Unknown Not applicable

75. Has epidemic management committee evaluated their preparedness and response activities during the past year? (observe written report to confirm)

Yes No Unknown Not applicable

IV. *Supervision and Feedback*

76. Did you have supervision plan in 2008 EFY? Yes/ No
77. If answer for Q 76 is No, how did you supervise? _____-

    _____
78. If answer for Q 76 is yes, did you supervise the health centers (HCS) and health posts (HPs) according to your plan in 2008 EFY? Yes/ No
79. If answer for Q 78 is No, what is the reason? _____-If answer for Q 78 is yes, how many times did you supervise each health center (HC) and health post (HP) in 2008 EFY? Health center_____ health post_____
80. Had you reviewed about surveillance practice by higher level supervision? Yes /No
81. Did you have regular supervision checklist? Yes/ No
82. If answer for Q 82 is No, how did you supervise the health centers and health posts?

    _____
83. Were you supervised by higher level officers the last 11 months in 2008 EFY? Yes/ No
84. If answer for Q 84 is yes how many times in 2008 EFY? _____
85. 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 (observe)
86. If answer for Q 86 is No, why_____
87. If answer for Q 86 is yes, for how many HCs and HPs did you send a feedback in 2008 EFY? HC----------
88. Had you received feedback from higher level supervisors in 2008 EFY? Yes/ No
89. If answer for Q 89 is yes how many feedbacks did you received in 2008 EFY? _
90. Did you conduct active case search for health facilities? Yes/No if yes, how many times and for how many health facilities? _____
91. Had you faced any challenge on supervision and feedback in 2008 EFY? Yes/No
92. If answer for Q 92 is yes a) list the challenges_____

    b) List the measures that you take to tackle the challenges_____

V. *Training*

93. Have you been trained in disease surveillance?

Yes No Unknown Not applicable

94. ***If yes,*** specify when, where, how long, by whom?

_____

95. What percent of your personnel in the district have been trained in surveillance and epidemic management? _____

VI. Resource

96. **I. Percent of sites that have:**

Logistics

a. Electricity

b. Bicycles

2. Motor cycles

a. Vehicles

97. **Data management**

a. Stationery

b. Calculator

c. Computer

d. Printer

e. Statistical package

98. **Communication**

a. Telephone service

b. Fax

c. radio

d. Computers that have modems

99. **Information education and communication materials**

a. Posters

b. Megaphone

c. Flipcharts or Image box

d. VCR and TV set

e. Generator

f. Screen

g. Projector (Movie)

h. Other:

VII. Satisfaction with surveillance system

100. Are you satisfied with the surveillance system?

Yes/ No Unknown/ Not applicable

101. ***If no***, how can the surveillance system be improved?

_____

102. **Opportunities for integration**

What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc)

Questionnaire for Attributes and level of Usefulness:

1. Total population under surveillance in 2008 EFY_____
2. What is the incidence / Prevalence of 2008 -in your area/region
   - Malaria _____Laboratory done _____cases P.F _____ P.v _____Deaths _____
   - Dysentery/Bloody diarrhea _____cases _____Deaths _____

III. Level of Usefulness of the Surveillance System for these selected priority diseases

Does the surveillance system help?

4. To detect outbreaks of priority diseases early on time to permit accurate diagnosis? Yes/ No
5. To estimate the magnitude of morbidity and mortality related to these diseases, including identification of factors associated with these diseases? Yes/ No
6. Permit assessment of the effect of prevention and control programs? Yes/ No

Observe (confirmation):

1. interventions and diseases trends analyzed ---Available //Not available

IV. Describe Each System Attributes:

Simplicity:

A. Is the case definition of the priority diseases (malaria, Dysentery, pandemic influenza….) easy for case detection by all level health professionals? Yes/ No
B. The surveillance system allows all levels of professionals to fill data? Yes/No
C. Does the surveillance system help to record and report data on time?
D. Does the surveillance system (Reporting format) have necessary information for investigation? Yes/No
E. How long it takes to fill the format? a, <5 minute b-10-15 minutes c- >15 minutes
F. How long does it take to have laboratory confirmation of
   A. Dysentery
   B. Malaria

Others _____**Flexibility:**

A. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? Yes/ No
B. Do you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement? Yes /No

   Comment:_____
C. Is the system easy to add new variables? Yes /No
D. Is the surveillance system easy to integrate with other systems? Yes /No
E. Is the surveillance system easy to add new disease on report? Yes /No
F. Is the system easy to add new information technology? Yes /No

Data Quality: (Completeness of the reporting forms/and validity of the recorded data)

1) Are the reporting site / data collectors trained/ supervised regularly? Yes/No
2) **Observe:** Review the last months report of these diseases
3) Average number of ***unknown or blank responses*** to variables in each of the reported forms

   _____
4) Percent of reports which are complete(that is with no blank or unknown responses) from the total reports _____
5) Are all health facilities reporting (including late report)?☐ Yes ☐ No

6) Percent of health facilities that send report of each week in the last 11 months 2008 EFY. ----

Total weekly reports received from H.C/health posts (including late reports. from july2015—may 2016)

WHO epid. Wk	N^{o} of HCs expected to report	N^{o} of HCs reported	N^{o}of HPs expected to report	N^{o}of HPs reported	WHO epid. wk	N^{o} of HCs expected to report	N^{o} of HCs reported	N^{o}of HPs expected to report	N^{o}of HPs reported

Acceptability:

7) Do you think all the reporting agents accept and well engaged to the surveillance activities? Yes/No

8) If yes, how many are active participants (of the expected including all private clinics)? _____/_____

9) If No for Q #7, 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;

   C. i.e. no dissemination of the analysis data back to reporting facilities

   D. Reporting formats are difficult to understand

   E. Report formats are time consuming

   F. Other:

   _____

   ____

   G. Were all participants using the standard case definition to identify cases? Yes/ No

H. If yes, what is your evidence? _____

I. Were all the reporting agents send their report using the current and appropriate surveillance reporting format? Yes/ No (if yes observe the documents)

J. Were all the health professionals aware about the surveillance system? Yes/No (if yes how they awared)

Representativeness:

10) What is the health service coverage of the district? _____%

11) What is the health service utilization of the district? _____%

12) Do you think, the populations under surveillance have good health seeking behavior for these diseases? Yes / No

13) Was the surveillance system enabled to follow the health and health related events in the whole community? Yes /No

14) If answer for Q 13 is no, who do you think is well benefited by the surveillance system? ☐ The urban ☐the rural ☐both

15) If yes for Q 13, do you think that rural and urban communities are equally benefited in surveillance system? Yes/ No , if no why _____

16) Are all the Socio demographic variables included in the surveillance reporting format? Yes /No

17) If the answer for Q 6 is No, which a) Sex---------- b) age group---------- C) ethnic group----- d) religion---------- is less represented?

Timeliness:

1. Are all health facilities reporting on time? ☐ Yes ☐ No
2. Percent of health facilities that report on time. ----------

Weekly health facilities reports received on time in the last 11 months in 2008 EFY

WHO epid wk	N^{O} of HCS expected to report	N^{O}of HCs that report on time	N^{O} of HPs expected to report	N^{O} of HPs that report on time	WHO epid wk	N^{O} of HCS expected to report	N^{O} of HCs that report on time	N^{O} of HPs expected to report	N^{O} of HPs that report on time

Stability:

3. Was any new restructuring affected the procedures and activities of the surveillance of these diseases? Yes/ No
4. Was there lack of resources that interrupt the surveillance system? Yes / No if yes what was it and how do you solve it

   _____
5. Was there any time /condition in which the surveillance is not fully operating? Yes/ No
6. If the answer yes for Q #5 When/what is the condition that talks the system not to function properly? ----------
7. How did you work with other departments and other sectors? _____

HEALTH CENTER QUESTIONER

Region_____ Zone _____ Woreda

_____

Name of H.C_____ Name of respondent_____

Tele_____ Date_____

General

Catchment population_____u5_____ # of Kebeles/H.Ps____/____

1. Is there a national PHEM manual for surveillance at this site?

Observe national surveillance manual:

Yes No Unknown Not applicable

2. What are the objectives of surveillance? _____
3. What are the strengths of your surveillance system? _____

_____

4. What are the weaknesses of your surveillance system? _____

_____

I. Case detection and registration

5. Observe the existence of a clinical register

Yes / No Unknown/ Not applicable

6. Observe the correct filling of the clinical register during the previous 30 days

Yes No Unknown Not applicable

7. Do you have a standard case definition for: (each priority disease) like avian influenza, measles, malaria, dysentery…?

Yes/No unknown / not applicable

8. Observe the standard case definition for:(each priority disease)

Yes / No Unknown/Not applicable

9. Observe the respondent correctly diagnosing one of the country's priority diseases using a standard case definition

Yes/ No Unknown/Not applicable

(Select one of the priority diseases in the facility's clinical registers and ask how they diagnosed it — interviewer should have the standard case definition from MOH)

II. Case confirmation

10. Are you able to collect sputum Y N U N/A

Stool Y N U N/A

Blood Y N U N/A

CSF at this facility? Y N U N/A

11. Observe the presence of materials required to collect

Stool Y N U N/A

Blood/serum Y N U N/A

CSF Y N U N/A

12. Do you have the capacity to handle sputum, stool, blood/serum and CSF until shipment at this facility ?Yes No Unknown Not applicable

13. Observe presence of functional cold chain at health facility

Yes No Unknown Not applicable

14. Observe presence of transport media for stool at health facility

Yes No Unknown Not applicable

15. Observe presence of packing materials for shipment of specimens at health facility

Yes No Unknown Not applicable

III. Data reporting

16. Which communication material did you have?

☐ E-mail

☐ Wired phone

☐ Mobile

☐ Radio

☐ Fax

17. ☐ Other----------Did you have address of Zonal/woreda PHEM officers? ☐Yes ☐ No

18. 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----------

19. When are you expected to send weekly report to the Zonal/woreda PHEM unit?

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

☐ Sunday

☐ I don‘t know exactly

20. 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

21. ☐Others---------- 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

22. If answer for Q 18 is yes, to whom did you send? ----------

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

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

25. Have you lacked appropriate surveillance forms and records at any time during the last 11 months (rumor log book, epidemic reporting, weekly, case based, investigation…

Yes No Unknown Not applicable

26. Observe that the last monthly report agreed with the register for 4 diseases (1 for each targeted group [eradication; elimination; epidemic prone; major public health importance])

a. **Obs** Measles Y N U N/A
b. **Obs** Malaria Y N U N/A
c. **Obs** AFP (polio) Y N U N/A
d. **Obs** Pandemic influenza Y N U N/A

27. Percent of sites that reported each reporting period to the next higher level during the past 3 months

Number of reports in the last 3 months compared to expected number

Obs Weekly: /12 times the number of sites

Obs immediately: /-- times the number of sites

28. On time (use national deadlines)

Obs Number of weekly reports submitted on time:-_____ /12 times the number of sites

Obs Number of immediately reports submitted on time: ___/-- times the number of sites

29. How do you report to higher level?

a. Mail
b. Fax
c. Telephone
d. Radio
e. Electronic
f. Other

30. Strengthening reporting

How can reporting be improved?

IV. Data analysis

31. Is there assigned focal person for surveillance activities? Yes/ No
32. If no for Q 31 how do you do surveillance activities? _____

33. If yes for Q 31, did he train on surveillance system? Yes/ No
34. If answer for Q33 is yes a) when----------? b) Topic----------?
    c) For how long? ----------
35. Was data compiled? Yes /No
36. Did you have computer on your office? Yes / No
37. Did you have computer on your department (PHEM unit)? Yes /No
38. What is the data entry and compilation instrument? ☐ Manual ☐ Computer
    ☐ other_____
39. Did you have computer skill on ☐ Ms. word ☐MS excel ☐MS power point ☐ Epi-info
40. Did you analyze data of the surveillance system? Yes /No
41. If answer for Q 40 is yes, did you describe data by ☐ time ☐ place ☐ person
42. Did you have denominators for data analysis? ☐ total population ☐ male ☐ female ☐ U5
43. Please indicate the frequency of your data analysis.
    ☐ Weekly
    ☐ Every two week
    ☐ Monthly
    ☐ Quarterly
    ☐Every 6 month
    ☐ Annually
    ☐ No regular time
44. Did you notify the results of your analysis to the higher level PHEM? Yes /No
45. If answer for Q 44 is No, what is the reason?
    ☐ Lack of knowledge
    ☐ Shortage of time
    ☐ Less attention given
    ☐ Shortage of materials
    ☐ Analysis is not familiar
    ☐ Negligence
    ☐ Other----------

46. Did you perform trend analysis **(**Observe the presence of line graph of cases by time)

Yes No Unknown Not applicable

47. Do you have an action threshold for any of the Country priority diseases?

Yes / No Unknown Not applicable

48. ***If yes for Q 47,*** what is it (Ask for at least 2 priority diseases)? _____cases ____ % increase _____rate

V. Epidemic preparedness

49. Did you have plan for epidemic response and preparedness? Yes/ No
50. Did you have emergency stocks of drugs and supplies? Yes/ No
51. If answer for Q 50 is No, how did you control epidemics? _____

_____

52. Had you experienced shortage of drugs, vaccines and supplies 2008 EFY? Yes No I don't know
53. Did you establish epidemic management committee? ☐ Yes ☐ No ☐ Not Applicable
54. Did the epidemic management committee have regularly scheduled meeting time? Yes/ No
55. Did you establish Rapid response team? ☐ Yes ☐ No ☐ Not Applicable
56. Did the Rapid response team have regularly scheduled meeting time during epidemics? Yes/No
57. Did you have case management protocol for epidemic prone diseases? ☐ Yes ☐ No ☐
58. Was there a budget for epidemic response? ☐ Yes ☐ No
59. Any Challenges on epidemic response and preparedness in 2008 EFY? Yes / No
60. If answer for Q 59 is yes, a) list the challenges_____

b) What measures did you take to tackle the challenges?_____

VI. Epidemic response

61. Is there any outbreak occurred in your area in 2008 EFY? Yes/ No how money _____
62. If yes for Q 61, how many of them were investigated in 2008 EFY? _____

63. Did you have outbreak investigation check list? Yes/ No

64. If answer for Q 63 is No, how did you know possible factors for the outbreak? ----------
---

65. Where was laboratory confirmation of cases done?

☐ Regional laboratory

☐ Hospital

☐ EPHI

☐ Health center

☐Contracted private laboratory

☐ Other----------

66. Has the health facility implemented prevention and control measures based on local data for at least one epidemic prone disease?

67. Did they achieved acceptable case fatality rates (e.g. 10% for Meningococcal, 1% for Cholera) during the most recent outbreak

Observe that the health facility achieved an acceptable case fatality rate for most recent outbreak Yes No Unknown Not applicable

VII. Supervision and Feedback

68. Were you supervised by higher level (regional, zonal or woreda) officers in 2008 EFY? Yes /No(observe at least one feedback report)
69. If answer for Q 68 is yes, how many times in 2008 EFY? ----------
70. Had you received feedback from higher level supervisors in 2008 EFY? Yes /No
71. If answer for Q 70 is yes, how many feedbacks did you received in 2008 EFY? ----------
72. Had you faced any challenge on supervision and feedback in 2008 EFY? Yes /No
73. If answer for Q 72 is yes a) list the challenges.----------
---

---

b) list the measures that you take to tackle the challenges.----------

---

---

74. How many meetings has this health facility conducted with the community members in the past 11 months? _____

Observe the minutes or report of at least 1 meeting between the health facility team and the community members within the 11 months

Yes No Unknown Not applicable

VIII. Resources

***75.* Logistics**

a) Electricity

a) Bicycles

b) Motor cycles

c) Vehicles

76. Data management

a) Stationery

b) Calculator

c) Computer

d) Software

e) Printer

77. Communication

A. Tel. service C. Computer with modem

B. Fax D. Radio call

78. Information education and communication materials

A. Posters

B. Megaphone

C. Flipcharts or Image box

D. VCR and TV set

E. Generator

F. Screen

G. Projector (Movie)

78. Other:

Protection materials (list) _____ _____ _____

_____

_____

Questionnaire for Attributes and level of Usefulness:

79. Total population under surveillance_____ 2008
80. What is the incidence / Prevalence of 2008 -in your area/region
    - Malaria _____ Total laboratory done _____cases P.F _____P.V____ Deaths _____
    - Dysentery _____cases _____Deaths _____

Level of Usefulness of the Surveillance System for these selected priority diseases

Does the surveillance system help?

81. To detect outbreaks of priority diseases early on time to permit accurate diagnosis? Yes/ No
82. To estimate the magnitude of morbidity and mortality related to these diseases, including identification of factors associated with these diseases? Yes/ No
83. Permit assessment of the effect of prevention and control programs? Yes/ No

Describe Each System Attributes:

Simplicity:

1) Is the case definition of the priority diseases (malaria, Dysentery, Pandemic influenza….) easy for case detection by all level health professionals? Yes/ No
2) The surveillance system allows all levels of professionals to fill data? Yes/No
3) Does the surveillance system help to record and report data on time?
4) Does the surveillance system (Reporting format) have necessary information for investigation? Yes/No
5) How long it takes to fill the format? a, <5 minute b-10-15 minutes c- >15 minutes
6) How long does it take to have laboratory confirmation of
    i. Dysentery
    ii. Malaria

iii. Others _____

Flexibility:

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? Yes/ No
2. Do you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement? Yes /No

   Comment:_____

   _____

   _____
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

Data Quality: (Completeness of the reporting forms/and validity of the recorded data)

1) Are the reporting site / data collectors trained/ supervised regularly? Yes/No
2) **Observe:** Review the last months report of these diseases
3) Average number of ***unknown or blank responses*** to variables in each of the reported forms

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

Acceptability:

1. Were all health workers using the standard case definition to identify cases? Yes/ No
2. If yes, What is your evidence _____
3. Were your health facilities sending your report using the current and appropriate surveillance reporting format? Yes/ No (if yes observe the documents)
4. Were all the health professionals aware about the surveillance system? Yes/No (if yes how they awared)

Representativeness:

1) What is the health service coverage of the catchment area? _____%

2) What is the health service utilization of the catchment area? _____%
3) Do you think, the populations under surveillance have good health seeking behavior for these diseases? Yes / No
4) Was the surveillance system enabled to follow the health and health related events in the whole community? Yes /No
5) If answer for Q 4 is no, who do you think is well benefited by the surveillance system? ☐ The urban ☐the rural ☐both
6) If yes for Q 4, do you think that rural and urban communities are equally benefited in surveillance system? Yes/ No , if no why _____
7) Are all the Socio demographic variables included in the surveillance reporting format? Yes /No
8) If the answer for Q 7 is No, which a) Sex---------- b) age group---------- C) ethnic group----- d) religion---------- is less represented?

Timeliness:

1. Are you sending report timely? ☐ Yes ☐ No (observe copy of reports)

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 if yes what was it and how do you solve it

   _____
3. Was there any time /condition in which the surveillance is not fully operating? Yes/ No
4. If the answer yes for Q #3 When/what is the condition that talks the system not to function properly? ----------

5. Opportunities for integration

What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.)

_____

_____

Health Post Level Questionnaire

Region _____ Respondent _____

Zone_____ Tele._____

Woreda_____ Date_____

Health C. (cluster)_____ Name of health Post_____

A. General overview

1. What are the objectives of surveillance? _____
2. What are the strengths of your surveillance system? _____
3. _____
4. What are the weaknesses of your surveillance system? _____

B. Communication and reporting assessment

1. Which communication material did you have?

☐ E-mail

☐ Wired phone

☐ Mobile

☐ Radio

☐ Fax

2. ☐ Other----------Did you have address of woreda or H.C PHEM officers? Yes /No
3. How frequently are you communicating with the woreda or H.C PHEM officers on emergencies and other daily activities?
   - ☐ Daily
   - ☐ Weekly
   - ☐ Every 2 week
   - ☐ Quarterly
   - ☐ Every 6 month
   - ☐ Yearly
4. ☐ Others----------When are you expected to send weekly report to the woreda or H.C PHEM unit?

☐ Monday

☐ Tuesday

☐ Wednesday

☐ Thursday

☐ Friday

☐ Saturday

☐ Sunday

☐ I don't know

5. How are you communicating the woreda or H.C PHEM officers in case of immediately reportable diseases?

☐ By e-mail

☐ By phone

☐ By fax

☐ Regular weekly

☐ 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? ----------

C. 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
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 format for reporting outbreaks? ☐Yes ☐ No ☐ Not Applicable
8. Was there a clinical register/logbook in your health post? ☐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? ----------

D. 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

E. 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? _____
4. Who was responsible to investigate an outbreak? _____
5. If answer for Q1 is yes how many out breaks were occurred in your Kebele in 2008 EFY? Fill the table below
6. Had you faced any challenge in outbreak investigation in 2008 EFY? Yes/ No
7. If answer for Q 6 is yes, a) list the challenges----------

---

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

F. Supervision and feedback

1. Were you supervised by higher level (regional) officers in 2008 EFY? ☐ Yes ☐ No
2. If answer for Q1 is yes how many times in 2008 EFY? ----------
3. Had you received feedback from higher level supervisors in 2008 EFY? ☐ Yes ☐ No

If answer for Q 3 is yes how many feedbacks did you received in 2008 EFY? ----------

Annexes 4: Questionnaire of health profile cheek list for West Armachiho district, Amhara, Ethiopia, 2015

Historical Aspects of the area (if available)

- How and why the name

  _____

  _____

- How was the district formed_____
- Any other historical aspect_____

1. **Geography and Climate**
   - Area of the District _____
   - Altitude _____
   - Latitude_____
   - Longitude _____
   - Average Annual rain fall _____
   - Average Annual temperature _____
   - Land bodies_____
   - Water bodies_____
2. **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 _____

3. **Population size by religion**
   - Orthodox 99.4%
   - Catholic

- Protestant
- Muslim 0.6%
- Others 0.008%

4. Estimated Population size by kebele in 2007 EFY (2014-2015)

6. Administrative setup

Total number of kebeles: _____

Rural _____

Urban_____

Supporting NGOs_____

7. Health status

Number of health facilities 2007 EFY (2014-2015)

Sr. 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 west Armachiho district health office and health facility in 2007EFY (2014-2015)

Sr. 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)

Sr. 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	

10. 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		

11. 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				

B. Top ten causes of deaths (mortality).

Sr. no	**Adult**		**Pediatrics**	
	Diseases type	Number	Diseases type	Number
1				
2				
3				

12. Vital statistics 2007 EFY (2014-2015)

CBR_____

CDR_____

NMR_____

PNMR_____

IMR_____

MMR_____

GR_____

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

Sr.	**Description**	**Performance**	**Remark**

no		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			

14. 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		

15. Endemic Diseases

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

Sr. no	Description		Number	
1	Number of Malarias‘ Kebeles			
2	ITN 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				

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

A. Education and school Health

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									

*Private Schools e.g. Nursery…

B. School health activities:

- Schools with water supply_____
- Schools with functional latrines _____
- Schools with HIV/other Health clubs_____
- Literacy ratio_____

C. Employment

- Number of people employed_____
- Number of people un employed_____
- Ratio of Employed to un employed_____

D. 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 _____

E. Social aspects

- Number of youth clubs_____
- Number of public libraries_____

- Others_____

17. Communication and Utilities

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

a. Transportation: kebeles _____ (%)

Health facility_____ (%)

b. Telecommunication: Kebeles _____ (%)

Health facility_____ (%)

c. Electric power: Kebeles _____ (%) Health facility _____ (%)

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

	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:

_____

18.1 Health Care financing /HCF/ (_____to_____ EFY)

Sr. 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									

18.2 Fee Waiver (FW) 20

Budget Allocated (Birr) _____

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

19. List Exempted Health services:

20. 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_____

21. Population screened for malnutrition

Children_____

Pregnancy_____

22. Nutrition intervention in West Armachiho district 2007 (2014-20150

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

23. What do you think the major Health problems of the district?

24. What do you think solutions of the addressed problems?

25. What are the main zoonotic diseases in the district?

A.

B.

C.

26. Problem Identification and Priority Setting – set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc

27. Discussion of the highlights and the main findings of the health profile assessment and description

Annexes 5: Questionnaires for Rapid Meher assessment questionnaire - Health and Nutrition Sector

ACRONYMS

AWD	Acute watery Diarrhea
CHD	Community health day
Cm	Cent meter
CTC kit	Cholera treatment center kit
Dd	Due date
EC	Ethiopian calendar
EFY	Ethiopian fiscal year
GAM	Global acute malnutrition
GC	Gregorian calendar
HC	Health center
HEW	Health Extension worker
MAM	Moderate acute malnutrition

Mm	Month
MUAC	Mid upper arm circumference
NGO	Non-Governmental organization
OTP	Outpatient therapeutic program
PLW	Pregnant and lactating women
RDT	Rapid diagnostic test
RUSF,	Ready to use supplementary food
RUTF	Ready to Use therapeutic Food
SAM	Sever acute malnutrition
SC	Stabilization center
TSFP	Target supplementary program
Vit A	Vitamin A

Questionnaires Rapid Meher assessment 2016, Health and Nutrition

Sector: Region/Zone level Questionnaire

Interviewer name _____

Institution:_____

Interview Date: (dd) ____/(mm)_____/2016_____

Region:_____

Zone:_____

Main contact at this Name:_____ Position:_____ Tel:_____

SECTION I: SOCIO- DEMOGRAPHIC PROFILE				
Population: Woreda total population	M:_____F:_____ ____		Total:____	Under 5_____
	No. of women of reproductive age (age 15-49 yrs.) _____			
	No. of pregnant women :_____			
Special Population *(if any)*	Pastorals__ __	Refugees___ _	IDPs____	Migrant Workers___
Number of HCs_____Number of HPs_____Number of Mobile health and Nutrition teams _____				

Number of HEWs_____			
Water availability at health centers (HC)	No. of health centers _____	No. of HC with water access_____	No. of HC without water access_____
SECTION II: HEALTH PROFILE			
2.1. Coordination and management systems			
Is there a PHEM Officer at Regional level? If yes how money_____			Yes□ No□
Does the RHB/Zone Health Office regularly report PHEM report as scheduled dates? Observe copies and comment _____			Yes□ No□
Are there PHEM Officers/focal persons at Woreda and HC levels? If yes how money are there in the woreda level_____ If yes how money are there in the woreda level_____			Yes□ No□
Do the Woredas, health facilities and HEWs regularly report PHEM report as scheduled dates? Observe copies and comment _____			Yes□ No□
Are all relevant government, NGOs and UN agencies represented at Regional PHEM?			Yes□ No□
Is there a multi sector health coordination forum? If yes how frequently meet? -----------			Yes□ No□
Is there a Public Health Emergency preparedness and response plan? Does it include reproductive health? Yes□ No□			Yes□ No□
Is there accessible emergency response fund for PHEM at regional level? If yes how much allocated----------			Yes□ No□
2.2. Mention anticipated epidemics (If yes please indicate Zone/Woreda at risk and risk population per anticipated risk: *(Use the back side)* _____,_____,_____, _____ _____			Yes□ No□

2.3. Public Health emergency Management	
Is there a Public Health and Nutrition Emergency Preparedness and Response plan?	Yes□ No□
If yes, is the plan budgeted/ funded?	Yes□ No□
Is there a trained staff on PHEM basic level (Regional/Zonal/Woreda/HFs)	Yes□ No□
If yes specify number of trained personnel per level: **Region/Total:** Female _____Male_____, **Zone:** Female_____Male_____, **Woreda**: Female_____Male_____	Yes□ No□
Is there a Regional/zonal trained Rapid Response team (RRT)?	Yes□ No□
Is there a trained staff on Emergency nutrition management at all level? If yes specify the no. : Total___ Male : ____Female :-___	Yes□ No□
2.4. Disease outbreaks	
Was there any outbreak in the last 3 months? YES_____ NO_____	
If yes, specify the type of disease Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____	
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____	
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____	
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____	
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____	

Is there any ongoing outbreak of any disease? YES_____ NO_____				
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____				
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____				
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____				
Drugs and medical supplies				
Description		Total requirement	Available	Gap
Vaccines	Meningitis vaccine			
Drugs	Coartem			
	Artesunate (rectal)			
	Artesunate (Inj)			
	Artemether IM			
	Quinine (PO)			
	Quinine (IV)			
	Chloroquine			
	Ceftriaxione			
	Oily CAF			
	Doxcycline			
	Ringer lactate			
	ORS			
	Vit A.			
Nutrition supplies	F100			
	F75			
	RUTF			
	Resomal			
	Routine antibiotics at			

	SC/OTP (the list can be annexed)			
Laboratory supplies	RDT (Malaria)			
	Pastorex (Meningitis)			
	LP set			
	TI bottle			
Kits	CTC Kit (AWD)			
Medical supplies	Gloves,			
	Syringe			
	PPE			
RH medical supplies/ drugs	Individual Clean Delivery Kits			
	Emergency medicines and supplies to support care of rape survivors? (Main shortage (if any): Specify)			

SECTION III: RISK FACTORS

Diseases	**Risk factors for epidemics to occur**	**Yes**	**No**
Malaria	Malaria endemic area	Yes□ No□	
	Presence of malaria breeding site	Yes□ No□	
	Interrupted or potentially interrupting rivers	Yes□ No□	

	Unprotected irrigation in the area	Yes□ No□
	LLINs coverage <80 No_____%_____	
	Indicate the coverage of IRS 2008 No_____%_____	
	Was there any prevention and control activities	Yes□ No□
	Number of malarious kebeles and total population in these Kebeles	Keb__ ___ Pop___ __
Meningitis	Was there Meningitis epidemic in the last 3 years (If yes specify date)	Yes□ No□
	Has vaccination been conducted in the past 3 years	Yes□ No□
	If yes : Indicate the date and number of people vaccinated Date_____ No_____	
AWD	Was there AWD epidemic in the last three years (If yes specify date)_____	
	Latrine coverage number and percentage. No_____%_____	
	Latrine utilization No_____%_____	
	Safe water coverage No_____%_____	
Measles	Is there ongoing measles outbreak	Yes□ No□
	What is the measles vaccination No and % coverage of 2008, less than one year No_____ Percentage of coverage_____	

	Has SIA been conducted in 2008 EFY	Yes□ No□
	If yes, Indicate the month and number of children vaccinated including the age group Month---------- No----------Age group----------	

Any other observations you made on health emergencies or any risks of epidemics?

_____

_____

_____

What were the major challenges in your Epidemic response experience?

_____

_____

SECTION IV: NUTRITION – SAM and MAM Management in Region/Zone – May to October 2016

SAM Management

4.1 Facilities with SAM management in Region/Zone

Month	Total Number of Hospitals	Total Number of Health centers	Total Number of Health posts	Number of SC.	Number of OTP.	Total Number of OTP/SC reported
May						
Jun						
Jul						
Aug						
Sep						
Oct						

4.2 Admission and performance of the therapeutic feeding programme for SAM management

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.
May												
Jun												
Jul												
Aug												
	2008	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.
	E.C.											
Sep												
Oct												

4.3. Availability of therapeutic supplies

	Yes	**No**
Is there sufficient supplies for 3 months of :		
RUTF		
F100		
F75		
2nd line drugs		
Is there sufficient woreda level storage for SAM treatment at woreda level?		
Water availability at stabilization center (SC)		
Others		

4.4. Reporting

Is there weekly SAM report? Yes _____ No_____ (if yes observe)

4.5. Training

How many HWs have been trained on SAM management in Region/Zone? _____,_____%

How many HEWs have been trained in SAM management? Number _____, _____%

MAM Management

4.6. TSFP programme in the woreda

Questions	Yes	No
Is this a priority 1 woreda?		
Was there a TSFP distribution last month?		
Is there sufficient TSFP supplies for the next 1 month (RUSF, CSB+/oil or CSB++) ?		
Is there woreda level storage of TSFP supplies for at least 2 months of supplies?		
Are children discharged from OTP referred to TSFP		
Is this a pilot (2nd generation) TSFP woreda?		
Has the Woreda been supported by an NGO in the last 3 months?		

4.7. MAM admission

Month	Priority 1 woreda Y/N		Total MAM Cases		Total Number of Food Distribution points in the woreda
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	
May					
Jun					
Jul					
Aug					
	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	
Sep					
Oct					

4.8. Screening

4.8.1. When was the last screening conducted in the woreda? _____

4.8.2. What screening modality is used in the woredas? EOS _____, CHD _____, Routine_____

4.8.3. Vitamin A coverage _____ De-worming coverage _____

4.9. Screening performance for children in the woreda

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with no odema and MUAC <11 cm			# of children with no oedema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children
				#SAM			#MAM		
				MUAC <11 cm	odema	Total			
May 2008									
Jun 2008									
Jul 2008									
Aug 2008									
Sep 2009									
Oct 2009									

4.10. Screening performance for Pregnant and lactating Women (PLW) in the woreda

Month	Target PLW	# of screened PLW	Screening Coverage (%)	# of PLW MUAC below 23.0 cm*	% Proxy GAM for PLW

May 2008					
Jun 2008					
Jul 2008					
Aug 2008					
Sep 2009					
Oct 2009					

* below 21.0 cm in Tigray up to Aug

4.11 Any other observations you made or any risks of emergency nutrition?

_____

4.12 What were the major challenges in your emergency nutrition response experience?

_____

SECTION V: FLOODING

5.1.Was there flood disaster in the last 6 months in the **Region /Zone**? Yes□ No□

5.2.If yes, How many woredas affected _____,

5.3.Mention the names of woredas affected with flood

_____,_____,

5.4.If yes, No of population affected_____

5.5.Human Death due to flooding_____ Yes□ No□**,**

5.6.If yes how many in number_____

5.7.Are there displaced people due to flooding? Yes□ No□

5.8.If Yes , how many_____ PLW

5.9.Children <5 yrs_____<2 yrs) _____<6months_____6-23 months_____

5.10. Was there outbreak in the flood affected area Yes□ No□

If yes , Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Any comment

_____

_____

_____

Summary: Requirements/Meher assessment needs 2016

Region/Zone	Type of Health and nutrition Emergency	Total estimated Beneficiaries[1]	Required finance

Rapid Meher assessment 2016 - Health and Nutrition Sector: Woreda level Questionnaire

Interviewer name _____ Institution:_____

Interview Date: (dd) ____/(mm)_____/2016_____ Region:_____

Zone:_____Woreda_____

Main contact at this location: Name:_____ Position:_____ Tel:_____

_____

SECTION I: SOCIO- DEMOGRAPHIC PROFILE				
Population: Woreda total population	M:_____F:_____		Total:_____ _	Under 5_____
	No. of women of reproductive age (age 15-49 yrs.) _____			
	No. of pregnant women :_____			
Special Population *(if any)*	Pastorals____	Refugees____	IDPs____	Migrant Workers___
Number of HCs_____ Number of HPs_____ Number of Mobile health teams _____Number of HEWs_____				
Water availability at health centers (HC)	No. of health centers _____	No. of HC with water access_____	No. of HC without water access_____	

SECTION II: HEALTH PROFILE	
2.1. Coordination and management systems	
Is there a PHEM Officer at Woreda Health Office level? How money PHEM officers are there_____	Yes□ No□
Is there RRT in Woreda health office	Yes□ No□
Are there RRTs at HCs? If yes no. _____	Yes□ No□
Are there PHEM Officers/focal persons at HCs? If yes No. _____	Yes□ No□
Does the Woreda Health Office regularly report PHEM report as scheduled dates? If yes, Observe copies and comment _____	Yes□ No□
Do the health facilities and HEWs regularly report PHEM report as scheduled dates? If yes, Observe copies and comment _____	Yes□ No□
Is there a multi sector Health Emergency/PHEM coordination forum? If yes how frequently meet?_____	Yes□ No□
Is there a Public Health Emergency preparedness and response plan? Does it include reproductive health? Observe and comment (Observe and comment) _____	Yes□ No□
Is there accessible emergency response fund?	Yes□ No□

If yes , How much is that _____ If yes, how much allocated and/or by whom allocated_____,_____	

2.2. Morbidity (List top 5 causes of Morbidity) in the year 2008 EC (2015-2016 GC)

a. Morbidity below 5	b. Morbidity above 5	
1.	1.	
2.	2.	
3.	3.	
4.	4.	
5.	5.	

2.3. List number of cases/deaths from Ginbot 2008 to Tikimt 2008 (May 2016 –October 2016)

Month	AWD				Malaria				Measles				Meningitis				Other(specif)
	Cases		Deaths		Cases		Deaths		Cases		Death		Cases		Death		
	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008	
May																	
Jun																	
Jul																	
Aug																	
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	
Sep																	
Oct																	

2.4. Disease Outbreaks

Was there any outbreak in the last 3 months? YES_____ NO_____

If yes, specify the type of disease

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time

period)_____		
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____		
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____		
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____		
Is there any ongoing outbreak of any disease?	**YES_____**	**NO_____**
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____		
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____		
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____		
2.5. Preparedness: Is there emergency drugs and supplies enough for 1 month? Or easily accessible on need?		**Comments**
Ringer Lactate (to treat AWD cases)	Yes□ No□	
ORS (to treat AWD cases):	Yes□ No□	
Doxycycline *(to treat AWD cases)*:	Yes□ No□	
Consumables : Syringes, Gloves *(for AWD management):*	Yes□ No□	
Amoxil susp (measles)	Yes□ No□	
Tetracycline ointment (measl es	Yes□ No□	
Vit A (measles)	Yes□ No□	
Coartem for Malaria	Yes□ No□	
Lab supply: RDT for Malaria	Yes□ No□	
Lab supply: RDT (pastorex) for M eningitis LP set	Yes□ No□ Yes□ No□	
Number of CTC kit available: (for AWD)	Yes□ No□	
Are there emergency reproductive health kits in health facilities to provide Basic Emergency Obstetric and New Born Care? (If No, list the missing medicines and supplies)		Yes□ No□
Are there emergency medicines and supplies to support care of rape survivors? (Main shortage (if any):		Yes□ No□

Specify)_____		
Is budget allocated for emergency rapid response by the woreda? How much allocated_____		Yes□ No□
SECTION III: RISK FACTORS		
Diseases	**Risk factors for epidemics to occur**	
Malaria	Malaria endemic area	Yes□ No□
	Presence of malaria breeding site	Yes□ No□
	Interrupted or potentially interrupting rivers	Yes□ No□
	Unprotected irrigation in the area	Yes□ No□
	LLINs coverage No_____%_____	
	Indicate the coverage of IRS 2008. No_____%_____	
	Was there any prevention and control activities. No_____%_____	
	Number of malarious kebeles and total population in these Kebeles	Keb_____ Pop_____
Meningitis	Was there Meningitis epidemic in the last 3 years (If yes specify date) If yes, No_____%_____	Yes□ No□
	Has vaccination been conducted in the past 3 years If yes, No_____%_____	Yes□ No□
	If yes : Indicate the date and number of people vaccinated Date _____No_____%_____	
AWD	Was there AWD epidemic in the last three years (If yes specify date)	Yes□ No□
	Latrine coverage No_____%_____	
	Latrine utilization No_____%_____	
	Safe water coverage No_____%_____	
Measles	Is there ongoing measles outbreak	Yes□ No□
	What is the measles vaccination coverage of 2008, less than one year	

	No_____%_____	
	Has SIA been conducted in 2008 EFY	Yes□ No□
	If yes, Indicate the month and number of children vaccinated including the age group Month---------- Number---------- Age group----------, coverage (%)------- -___	

Any other observations you made or any risks of epidemics?

_____

What were the major challenges in your Epidemic response experience?

_____

SECTION IV: NUTRITION– SAM and MAM Management in the woreda – May to October 2016

SAM Management

4.1. Facilities with SAM management in the woreda

Month	Total Number of Health centers/ Hospitals	Total Number of Health posts	Number of SC.	% of health centers/ hospitals with a SC.	Number of OTP.	% of health posts with an OTP	Total Number of OTP/SC reported	% of OTP/SC who have reported
May								
Jun								
Jul								
Aug								
Sep								
Oct								

4.2 Admission and performance of the therapeutic feeding program for SAM management

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
May												
Jun												
Jul												
Aug												
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
Sep												

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007	2008	2007	2008	2007	2008	2007	2008	2007	2008
Oct												

4.3. Availability of therapeutic supplies

	Yes	No
Is there sufficient supplies for 3 months of :		
RUTF		
F100		
F75		
2nd line drugs		
Is there sufficient woreda level storage for SAM treatment at woreda level?		
water availability at stabilization center (SC)		

4.4. Reporting

Is there weekly SAM report? yes _____ No_____ (if yes observe)

4.5. Training

How many HWs have been trained on SAM management in the Woreda? _____

How many HEWs are there in the woreda? No_____, _____%

How many HEWs have been trained in MAM management? No _____, _____%

4.6. MAM Management

TSFP programme in the woreda

Questions	Yes	No
Is this a priority 1 woreda?		
Was there a TSFP distribution last month?		
Is there sufficient TSFP supplies for the next 1 month (RUSF, CSB+/oil or CSB++) ?		
Is there woreda level storage of TSFP supplies for at least 2 months of supplies?		
Are children discharged from OTP referred to TSFP		
Is this a pilot (2nd generation) TSFP woreda?		
Has the Woreda been supported by an NGO in the last 3 months?		

4.7. MAM admission

Month	Priority 1 woreda Yes□ No□ I don't Know□		Total MAM Cases		Total Number of Food Distribution point in the woreda
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	
May					
Jun					
Jul					
Aug					
	2008	2009	2008	2009	
Sep					
Oct					

4.8. Screening

When was the last screening conducted in the woreda? _____

What screening modality is used in the woredas? EOS _____, CHD ____, Routine____, vitamin A and Screening coverage _____ Vitamin A coverage De-worming coverage _____

4.9. Screening performance for children in the woreda

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with no odema and MUAC <11cm			# of children with no oedema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children
				#SAM			#MAM		
				MUAC <11 cm	odema	Total			
May									
Jun									
Jul									
Aug									
Sep									
Oct									

4.10. Screening performance for Pregnant and lactating Women (PLW) in the woreda

Month	Target PLW	# of screened PLW	Screening Coverage (%)	# of PLW MUAC below 23.0 cm*	% Proxy GAM for PLW
May 2008					
Jun 2008					
Jul 2008					

Aug 2008					
Sep 2009					
Oct 2009					

* below 21.0 cm in Tigray

4.11 Any other observations you made or any risks of emergency nutrition?

_____

4.12 What were the major challenges in your emergency nutrition response experience?

_____

SECTION V: FLOODING

5.1. Was there flood disaster in the last 6 months in the **Region /Zone**? Yes□ No□

5.2. If yes, How many Kebeles affected _____,

5.3. Names of kebeles _____,_____,_____,_____

5.4. Population affected_____

5.5. Human death due to flooding Yes□ No□**,**

5.6. If yes how many in number_____

5.7. Are there displaced people due to flooding? Yes□ No□

5.8. If Yes, how many PLW_____

5.9. Children<5yrs_____<2 yrs _____ <6months_____ 6-23 months _____

5.10. Was there outbreak in the flood affected area Yes□ No□

If yes , Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____
Type of outbreak _____Number of cases _____Deaths _____(specify the time

period)_____
Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Any comments on flooding

_____

Rapid Meher Assessment 2016 - Health and Nutrition Sector: Health Facility/Health Center Level Questionnaire

Interviewer name _____ Institution:_____

Region:_____

Interview Date: (dd) ____/(mm)_____/2016_____ _Zone:_____Woreda_____

Name of HF/HC _____

Main contact at this location: Name:_____ Position:_____ Tel:_____

SECTION I: SOCIO- DEMOGRAPHIC PROFILE				
Catchment total population	M:_____F:_____		Under 5_____	Total _____
	No. of women of reproductive age (age 15-49 yrs.) _____			
	No. of pregnant women :_____			
Special Population *(if any):*	Pastorals____	Refugees____	IDPs____	Migrant Workers___
water availability at health centers (HC)	Yes _____	No _____	Comments _____	

Description: health provision status under catchment	Number
Number of HPs	
Number of Mobile health teams	
Number of HEWs	
SECTION II: HEALTH PROFILE	
2.1. Coordination	
Is there a multi-discipline rapid response team (RRT) in HC? if yes how frequently meet----------	Yes□ No□
Is there a Public Health Emergency preparedness and response plan?	Yes□

	No□
Is there accessible emergency response fund? If yes how much allocated----------	Yes□ No□

2.2. Morbidity (List top 5 causes of Morbidity) in the year 2008 EC (2015-2016 GC)

c. Morbidity below 5	d. Morbidity above 5	
1.	1.	
2.	2.	
3.	3.	
4.	4.	
5.	5.	

2.3. Disease Outbreaks

Was there any outbreak in the last 3 months in your catchment area? YES_____ No _____

If yes, specify the type of disease

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Is there any ongoing outbreak of any disease in your catchment area? YES___ No____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

2.4. Emergency preparedness: Is there emergency drugs and supplies enough or easily accessible on need for immediate response?		**Comments**
Ringer Lactate (to treat AWD cases)	Yes□ No□	
ORS (to treat AWD cases):	Yes□ No□	
Doxycycline *(to treat AWD cases)*:	Yes□ No□	
Consumables : Syringes, Gloves *(for AWD management):*	Yes□ No□	
Amoxil susp (measles)	Yes□ No□	
Tetracycline ointment (measl es	Yes□ No□	
Vit A (measles)	Yes□ No□	
Coartem for Malaria	Yes□ No□	
Lab supply: RDT for Malaria	Yes□ No□	
Lab supply: RDT (pastorex) for Meningitis LP set	Yes□ No□ Yes□ No□	
Number of CTC kit available: (for AWD)	Yes□ No□	
Are there emergency reproductive health kits in hospitals to provide Comprehensive Emergency Obstetric and New Born Care?	Yes□ No□	
Are there emergency medicines and supplies to support care of rape survivors?	Yes□ No□	
Main shortage (if any): Specify		
SECTION III: RISK FACTORS IN CATCHMENT AREA		
Diseases	**Risk factors for epidemics to occur**	
Malaria	Malaria endemic area	Yes□ No□
	Presence of malaria breeding site	Yes□ No□
	Interrupted or potentially interrupting rivers	Yes□ No□
	Unprotected irrigation in the area	Yes□ No□
	LLINs coverage <80% No_____%_____	Yes□ No□
	Indicate the coverage of IRS 2008 No_____%_____	

	Was there any prevention and control activities? No_____%_____	
	Number of malarious kebeles and total population in these Kebeles	Keb _____ pop ___
Meningitis	Was there Meningitis epidemic in the last 3 years If yes specify date_____	Yes□ No□
	Has vaccination been conducted in the past 3 years	Yes□ No□
	If yes : Indicate the date and number of people vaccinated Date_____ No of people_____	
AWD	Was there AWD epidemic in the last three years (If yes specify date)_____	
	Latrine coverage No_____%_____	
	Latrine utilization No_____%_____	
	Safe water coverage No_____%_____	
Measles	Is there ongoing measles outbreak	Yes□ No□
	What is the measles vaccination coverage of 2008 for less than one year No_____%_____	
	Has SIA been conducted in 2008 or 2009 EFY	Yes□ No□
	If yes, Indicate the month and number of children vaccinated including the age group. Month _____No of children_____ Age group_____ Coverage (%)_____	

What were the major challenges in your Epidemic response experience? _____

Any other comments in health emergency ----------

Any other observations you made or any risks of epidemics?

SECTION IV: NUTRITION – SAM and MAM Management at HC

4.1. SAM Management

Is there SC in HC? Yes ___ No. ____

Is there OTP in HC? Yes ___ No. ____

How many of the HPs have OTP? _____/% _____

4.2 Admission and performance of the therapeutic feeding programme for SAM management

Month	Total SAM Cases		No of SAM children cured		No of SAM children defaulted		No of SAM children died		No of SAM children non-respondent		No of SAM children other		No. of HPs reported	
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.
May														
Jun														
Jul														
Aug														
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
Sep														
Oct														

4.3. Availability of therapeutic supplies

Description	**Yes**	**No**
Is there sufficient supplies for 3 months of :		
RUTF		
F100		
F75		
2nd line drugs		
Water availability at stabilization center (SC)		
Specify if any shortages		

4.4. SAM reporting

How many HEWs are there in the catchment? _____

How many HEWs have been trained in SAM management? Number ____ %_____

Is there weekly SAM report? Yes _____ No_____ (if yes observe)

4.5. MAM Management: TSFP programme in catchment area

Questions	Yes	No
Is this a priority 1 area?		
Was there a TSFP distribution last month?		
Are children discharged from OTP referred to TSFP? If yes, how of them referred since last month_____ of_____ total		

4.6. Screening

When was the last screening conducted in the catchment area? _____

What screening modality is used in the woredas? EOS _____, CHD ____

Screening coverage Number _____ % _____

Vitamin children Number _____ % _____

Deworming Number _____ % _____

Screening PLW Number _____ % _____

4.7. Screening performance for children in catchment area

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with no odema and MUAC <11 cm			# of chidren with no oedema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children
				#SAM			#MAM		
				MUAC <11 cm	odema	Total			
May									
Jun									
Jul									
Aug									
Sep									

4.8. Screening performance for Pregnant and lactating Women (PLW) in the woreda

Month	Target PLW	# of screened PLW	Screening Coverage (%)	# of PLW MUAC below 23.0 cm*	**% Proxy GAM for PLW**
May 2008					
Jun 2008					
Jul 2008					
Aug 2008					
Sep 2009					
Oct 2009					

* below 21.0 cm in Tigray

4.9. SC observation

Observe and comment (status of ward, supplies, admitted children, records, trained person availability, management)

4.10. What were the major challenges in your emergency nutrition response experience?

4.11. Any other comments

Rapid Meher assessment 2016 - Health and Nutrition Sector: Health Post level Questionnaire

Interviewer name _____ Institution:_____

Region:_____

Interview Date: (dd) ____/(mm)_____/2016_____ Zone: _____Woreda_____

Name of Hp _____

Main contact at this location: Name:_____ Position:_____ Tel:_____

SECTION I: SOCIO- DEMOGRAPHIC PROFILE				
Kebele total population:	M:_____F:_____	Total _____	Under 5:____	
	No. of women of reproductive age (age 15-49 yrs.) _____			
	No. of pregnant women :_____			
Special Population *(if any):*	Pastorals_____ __	Refugees____ _	IDPs____ _	Migrant Workers_____
water availability at health	Yes □ No □			

centers(HP)	

SECTION II. HEALTH EMERGENCY

2.1.Disease Outbreaks

Was there any outbreak in the last 3 months in your Kebele? YES_____ NO_____

If yes, specify the type of disease

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Is there any ongoing outbreak of any disease? YES_____ NO_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

Type of outbreak _____Number of cases _____Deaths _____(specify the time period)_____

2.2.Preparedness for emergency response

Is there emergency drugs and supplies enough for 1 month? Or easily accessible on need?

ORS (to treat AWD cases):	Yes□ No□	
Coartem for Malaria	Yes□ No□	
Lab supply: RDT for Malaria	Yes□ No□	
Main shortage (if any): Specify		

2.3.RISK FACTORS

Diseases	**Risk factors for epidemics to occur**	
Malaria	Malaria endemic area	
	Population in malaria area	
	LLINs coverage <80%	
	Indicate the coverage of IRS 2008	

	Weak environmental malaria control activities	
AWD	Was there AWD epidemic in the last three years? If yes specify date_____	
	Latrine coverage No_____%_____	
	Latrine utilization No_____%_____	
	Safe water coverage No_____%_____	
Measles	Is there ongoing measles outbreak	
	What is the measles vaccination coverage of 2008, less than one year No vaccinated _____ No children < 1year_____	
	Has SIA been conducted in 2008 EFY	Yes□ No□
	If yes, Indicate the month and number of children vaccinated including the age group Month---------- Number vaccinates---------- Age group---------- Coverage (%)---------	

SECTION III: NUTRITION – SAM and MAM Management in the Kebele

3.1.Availability of SAM service/OTP

Is there OTP at HP/Kebele Yes ___ No _____

If yes fill the tables below

Admission and performance of the therapeutic feeding programme for SAM management

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.
May												
Jun												
Jul												

Month	Total SAM Cases		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.	2007 E.C.	2008 E.C.
Aug												
Sep												
Oct												

3.2.Availability of therapeutic supplies

Questions	**Yes**	**No**
Is there sufficient supplies for 3 months of :		
RUTF		
F100		
F75		
2nd line drugs		
Is there sufficient Kebele level storage for SAM treatment?		

3.3.Screening

When was the last screening conducted in the Kebele? _____

What screening modality is used in the Kebele? EOS _____, CHD ____,

Coverage:

Screening children: Number _____ %_____

Screening PLW: Number _____ %_____

Vitamin A children: Number _____ %_____

Vit A Lactating women: Number _____ %_____

De-worming children: Number _____ %_____

SAM children: Number _____ %_____

MAM children: Number _____ %_____

3.4.Nutrition Reporting

Is there weekly SAM report? yes _____ No_____ (if yes observe) yes _____ No_____

How many HEW are there in the HP? _____

How many have been trained in SAM management? ____

3.5.TSFP programme in the Kebele

Was there a TSFP distribution for last screening/month? Yes ____ No ____

Are children discharged from OTP referred to TSFP? Yes ____ No ____

Challenge and any other comments by HEWs

_____O

ver all observation of HP preparedness for health and nutrition emergency services

_____

_____

Annexes 6: Standardized check list for visceral leishmaniasis

Patient demographic information

Patient Name: _____ Age: ____ Gender: Male: □ Female: □

Occupation _____ Migration Status: Migrant □ Resident □ Re-settler □

Current Kebele: _____ Current Woreda: _____ Region: _____

How long in the current address: _____ (months) Original Kebele & Woreda: _____

Basic clinical information during admission

General condition: able to walk: □ unable to walk: □ Number of

Months sick before treatment: ____

HIV status □ unknown □ known

If known, Positive □ Negative □

If known, PITC offered & counseled Yes☐ No☐

Tested Yes □ No □ Test Result Positive □ Negative □

Clinical conditions: Fever □ Weight loss □ Jaundice: □ Lymphadenopathy: □ Vomiting: □

Bleeding: □

Spleen size (cm) _____

Hemoglobin (g/dl): _____

Platelet count (if done) _____

Presence of concomitant infection: No: □ Yes: □

If yes specify: Tuberculosis □ Malaria □ Diarrhea □ Pneumonia □

Nutritional status at admission

Weight (kg): _____.___ Height (cm). _____ B.M.I _____or Wt. / Ht_____ Edema: Yes □ No □

Leishmaniasis diagnosis

New case: ☐ Relapse:☐

If relapse: First☐ Second: ☐ Other: ___

Disease category: VL: ☐ CL: ☐ MCL:☐ PKDL☐

DAT: Done: □ Not done: □ DAT titter: _____

Rk39: Positive: □ Negative: □ not done □

Aspirate: Done: □ Not done: □

Aspirate source: Bone marrow: Positive □ Negative □

Spleen: Positive □ Negative □

Lymph nodes: Positive □ Negative □

VL treatment

Date treatment started (dd-mm-yyyy): __ __-__ __-__ __ __ __ E.C.

1st treatment: SSG: □ Ambisome: □ SSG + Paromomycin □ other: _____ No. of doses: _____

2nd treatment: SSG: □ Ambisome: □ SSG + Paromomycin □ other _____ No. of doses: _____

Toxicity during treatment:

Arrhythmia: □ Pancreatitis: □ Jaundice: □ Kidney failure: □ others: _____

Patient discharge status

Initial cure: □ Date of initial cure: (dd-mm-yyyy): __ __-__ __-__ __ __ __EC

Final cure: □ Date of final cure: (dd-mm-yyyy): __ __-__ __-__ __ __ __EC

Defaulter: □ Date last seen (dd-mm-yyyy): __ __-__ __-__ __ __ __EC

Referred: □ Date referred: (dd-mm-yyyy): __ __-__ __-__ __ __ __EC

Died: □ Date of death: (dd-mm-yyyy): __ __-__ __-__ __ __ __EC

If patient died, cause of death:_____

Test of cure: Done □ not done □

Source _____

Result _____

Discharge weight (kg): _____.___

Discharge spleen size (cm): _____

Discharge hemoglobin (g/dl): _____

HIV Co-infection:

CD4 count (if done) _____

On ART on admission □ Regimen _____

Annexes 7: CURRICULUM VITEA/CV

PERSONAL DETAILS

Name: Sisay Awoke
Sex: Male
Age: 27
Contact number: 0931887333
Nationality: Ethiopian
Email: sisaya16@gmail.com

HIGHER EDUCATION

I have joined to Wollo University in 2007 and graduated in BSC Nursing on July 2010

I have joined to Addis Ababa University in masters of public health in field Epidemiology 2015-2017

ADDITIONAL SKILLS AND TRAINING

- Good Communication and social works
- Regression data analysis in master of statistics
- Arc GIs training, SPSS, STATA

Language skills

- Amharic Excellent
- English Excellent

Area of training

- National malaria prevention and control Certificate by Ethiopian ministry of health
- Health network strengthen and networking Certificate by USAID
- Regression and data analysis of master of statistics Certificate by Hasselt university
- National training on malaria planning and monitoring program certificate by ministry of health
- Arc GIs training certificate by Addis Ababa university

References

Mr. Yimer Seid instructor at Addis Ababa University School of public health

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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 this thesis have been duly acknowledged.

Name: Sisay Awoke_____

Signature: _____

Place: _____

Date of Submission: _____

The thesis has been submitted for examination with my approval as a university advisor.

Name of advisor: _____

Signature: _____

Date: _____