

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



Ethiopian Field Epidemiology Training Program (EFETP)

Compiled Body of Works

By

Afewwork Melesse (BSC)

Submitted to the School of Graduates Studies of Addis Ababa
University in Partial Fulfillment of the Degree of Master of
Public Health in Field Epidemiology

June, 2018

Addis Ababa

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Mentors: 1. Prof. Alemayehu Work
2. Mr. Muluken Gizaw

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Approval by Examining Board

Chairman, School Graduate Committee

Advisor

Examiner

Examiner

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List of Abbreviations

AAHB Addis Ababa Health Bureau

AAU Addis Ababa University

AAU SPH Addis Ababa University School of Public Health

AEFI Adverse Events Following Immunization

AFI Acute Febrile Illness

AFP Acute Flaccid Paralysis

AIDS Acquired Immune Deficiency Syndrome

ANC Antenatal Care

AR Attack Rate

ART Anti-Retroviral Therapy

AURTI Acute Upper Respiratory Tract Infection

AWD Acute Watery Diarrhea

BCG Bacille Callmete-Guerin

BPR Business Process Reengineering

CBR Crude Birth Rate

CDC Center for Disease Control and Prevention

CDR Crude Death Rate

CFR Case Fatality Ratio

CHIS California Health Interview Survey

CMAM Community Management of Acute Malnutrition

CMR Child Mortality Rate

CSA Central Statistical Agency

CTC Cholera Treatment Center

EDHS Ethiopian Demographic Health Surveillance

EFETP Ethiopian Field Epidemiology Training Program

EFY Ethiopian Fiscal Year

EPEC Enteropathogenic Escherichia Coli

EPHI Ethiopian Public Health Institute

EPHIA Ethiopian Public Health International Association

EPI Expanded program of Immunization

EPRP Emergency Preparedness and Response Plan

EPSD Epidermal Parasitic Skin Diseases

ETEC Enterotoxigenic Escherichia Coli

FGD Focus Group Discussion

FMOH Federal Ministry of Health

FP Family Planning

GBV Gender Based Violence

GOs Government Organizations

HCT HIV Counselling and Testing

HEWs Health Extension Workers

HIV Human Immune Virus

HMIS Health Management and Information System

HUS Hemolytic Uremic Syndrome

IDPs Internally Displaced Persons

IDS Integrated Disease Surveillance

IDSR Integrated Disease Surveillance and prevention

IMR Infant Mortality Rate

IRS Indoor Residual Spraying

ITN Insecticides Treated Nets

KAP Knowledge, Attitude and Practice

KG Kindergarten

LLINS Long Lasting Insecticides Treated Nets

LP Lumber Puncture

MAM Moderate Acute Malnutrition

MCH Maternal and Child Health

MMR Maternal Mortality Rate

MOH Minster of Health

MSS Masculo Skeletal System

MUAC Mid Upper Arm Circumference

NCHS National Center for Health Statistics

NGO Non-Governmental Organization

NNT Neonatal Tetanus

NTDs Neglected Tropical Diseases

ONRS Oromia National Regional State

OPD Out Patient Department

OPV Oral Polio Vaccine

ORS Oral Rehydration Solution

OTP Outpatient Therapeutic Program

PHEM Public Health Emergency management

PITC Provider Initiated Test and counseling

PLW Pregnant and Lactating Women

PLWHA People Living with HIV/AIDS

PMTCT Prevention of Mother to Child Transmission

PNC Postnatal Care

PSNP Productive Safety Net program

PTB Pulmonary Tuberculosis

PVP Predictive Value Positive

RHB Regional Health Bureau

RDT Rapid Diagnostic Test

RR Reporting Rate

RRT Rapid Response Team

RUTF Ready to Use Therapeutic Food

SAM Severe Acute Malnutrition

SC: Stabilization Center

SIA: Supplementary Immunization Activities

SNNP Southern Nation Nationality people

SPH School of Public Health

TB Tuberculosis

TBA Traditional Birth Attendant

TFP Therapeutic Feeding Program

TSFP Targeted Supplementary Feeding Program

UNICEF United Nations International Children's Fund

VCT Voluntary Counseling and Testing

WASH Water, Sanitation and Hygiene

WHO World Health Organization

WHO/AFRO World Health Organization Regional Office for Africa

Executive Summary

Field Epidemiology training in Ethiopia was started in 2009 to produce competent and skillful Epidemiologists, cadres of PHEM officers who promote and assist evidence-based decision making.

The program is quite different from traditional epidemiology; unlike other public health students, the residents of field epidemiology spend 75% of the two-year study period in different field sites so that they can practically apply what they learned in the class and become acquainted with how the system is functioning and what the existing gaps are that hamper the proper functioning of the system. In doing so, they have a chance to apply their knowledge and skill.

During this two-year residency period I have been able to accomplished most of the outputs that was expected from me. My first work was an outbreak investigation. Two outbreaks were investigated. The first one was AWD outbreak investigation. It was conducted in Kombolcha Woreda, East Harargie zone, Oromia. A total of 63 study participants (21 cases and 42 controls) were enrolled in the study. Then Scabies outbreak investigation was done in Dire Dawa City Administration, by recruiting 96 study participants (32 cases and 64 controls). The second work or output was surveillance data analysis report. The report touched a three year (or 2013-2016) bacillary dysentery cases data analysis in Addis Ketema sub city of Addis Ababa. Surveillance system Evaluation was also conducted in Addis Ketema sub city, August 2017. The AFP and Acute Malnutrition surveillance was evaluated as a proxy for the rest of the surveillance system.

Health profile description report was done as a fourth output. It was conducted in one of the districts of Addis Ketema sub city, woreda 3 administrative unit. One manuscript for peer reviewed journals and one abstract were prepared and incorporated as 5th & 6th outputs in this document. A summary narrative report of rapid meher assessment again done in 5 zones and 16 visited woredas of Tigray Region from 21 Nov. to 8 Dec. 2017. Finally, Proposal for epidemiologic research project was prepared on Knowledge, Attitude and Practice of Scabies among local population of Raya-Alamata Woreda, Southern Tigray Regional Zone-2017.

Chapter I- Outbreak/Epidemic Investigations

1.1 Acute Watery Diarrhea Outbreak Investigation, Kombolcha Woreda, East Harargie Zone, Oromia, Ethiopia 2017.

Abstract

Background: In the mid of August 2017, one of the Oromia regional state district, Kombolcha woreda was experienced an outbreak of acute watery diarrhea. It is one of the diarrheal diseases that can occur as result of various infectious agents and following ingestion of food contaminated with pre-formed bacterial toxins. We investigated the outbreak to describe the cases, identify major risk factors associated with it and provide evidence-based recommendation.

Methods: We conducted a retrospective unmatched case-control study. Cases were identified from the registered line list form and controls were from the community who has a neighborhood relation with the cases. A total of 63 participants were interviewed on socio demographic variables, clinical & contact history, and water source, feeding & washing practice, latrine use and knowledge using semi structured questionnaires. Data was cleaned, checked and made the necessary correction manually. And also entered and analyzed on computer using Epi-info version 7 and Excel statistical software packages.

Results: A total of 193 AWD cases has been registered and reported from the period of 15th August 2017 to 9th September 2017 with attack rate of 0.13 and case fatality rate of 4.6. We recruited 63 participants (21 cases and 42 controls) for the study. The age ranges among the study participants lied in between 8 and 70 years old. Males took the highest percentage from the cases, which took 61% and that of females in the controls, which cover 52%. The multivariable binary logistic regression analysis showed that having contact history [AOD=60; 95% CI: 4-84, P-Value: 0.0024], using pond water for drinking & other house hold consumption [AOD=12; 95% CI: 3-14, P-Value: 0.0092], eating food outside [AOD=0.1; 95% CI: 0.05-0.9, P-Value: 0.0423] and Common latrine user in compound [AOD=46; 95% CI: 2-114, P-Value: 0.0202] were the independent risk factors for acquiring acute watery diarrhea.

Conclusion: Male and the age group of 25-44 years old was a more prone community member for the outbreak. Factors like contact history, using pond water for drinking and other house hold consumption, eating food outside and common latrine use in the compound were riskier behaviors for contracting acute watery diarrhea. There was clear raise in the epidemic case fatality rate and even it was higher than the recommended World Health Organization guideline.

Introduction

Background of the Study

The two types of emergencies regarding acute diarrhea are acute watery diarrhea (cholera) and acute bloody diarrhea (shigella dysentery). Acute watery diarrhea (AWD) is a diarrheal disease which can be caused by many different infections and may also occur following ingestion of chemicals or food contaminated with pre-formed bacterial toxins. (2)

Those of the many different infectious agents that most likely cause outbreaks of acute watery diarrhea considered as enteric pathogens and categorized as gram-negative bacteria (or bacteria), viruses, parasites and helminths. The gram- positive bacteria include staphylococcus aureus, clostridium perfringens, or bacillus cereus food poisoning. The viral causes are rotavirus (group A), adenovirus (group F), norovirus, astro virus, sapo virus. Other category of bacteria that can cause acute diarrhea comprise Enterotoxigenic Escherichia coli (ETEC), Enteropathogenic E. coli (EPEC), Campylobacteria jejuni, Salmonella species, Shigella Sonnei, Vibrio cholerae serogroup 01 and 139; with and without the cholera toxin gene and the Parasites & helminths which include Giardia intestinalis, cryptosporidium spp., Isospora belli, cyclospora cayetanensis and Microsporidia. (3)

When reviewing of the clinical and epidemiologic features of multiple patients who are part of a suspected outbreak of acute watery diarrhea, it is often hard to distinguish a single patient with cholera from a patient infected with one of the other enteric pathogens described above. Most patients infected with toxigenic *Vibrio cholerae* serogroup O1 or O139 are asymptomatic, and as many as 20% have only a mild to moderate diarrheal illness, approximately 5% will develop the classic symptoms and signs of severe cholera (cholera gravis) and will be at risk for severe dehydration or death within hours or days if not properly rehydrated. (3)

As most recent research publication indicated, AWD or cholera is on the rise with an estimated 1.4 billion people at risk in endemic countries and an estimated 3 to 5 million cases and 100,000-120,000 deaths per year worldwide. It has also remained endemic in some Asian countries for centuries, has become endemic in an increasing number of African countries with epidemics

throughout the years, and has recently returned to the Americas with on-going transmission in Haiti and the Dominican Republic. New, more virulent and drug-resistant strains of *Vibrio cholerae* continue to emerge, and the frequency of large protracted outbreaks with high case fatality ratios has increased. (4)

From late 2014 to end of 2015, AWD outbreak has grasped 30 countries of Kenya causing close to 7000 cases of morbidity and over 100 deaths. The outbreak occurred in light of the El Niño floods which created favorable conditions for the spread of the causative bacteria. After spreading in Kenya for over a year, the disease moved to Ethiopia. (5)

In Ethiopia, AWD was first reported in districts of Oromia and Ethiopian Somali close to the Ethio-Kenyan border in February 2016. Thereafter, it continued spreading east and north reaching many parts of the country including the capital city and the northern parts of the country. Despite an ongoing effort to contain the outbreak, it continued spreading to large areas of the country affecting a large number of people; its course remained protracted and kept many people at risk. (5)

The major contributors for the occurrence of such outbreak and the propagated dissemination of the disease are: climatic condition, demographic and social factors, insufficient WASH access, poor awareness about the disease and way of life.

Objectives

General Objective

- To describe the epidemiologic feature of AWD and identify risk factors associated with its outbreak in Kombolcha woreda, East Harergie Zone, Oromia-Ethiopia 2017.

Specific Objectives

- To describe AWD case by person, place, and time.
- To identify the major risk population groups for the acute watery diarrhea infections.
- To determine the risk factors associated with increased acute watery diarrhea.

- To provide evidence-based recommendations to prevent future outbreaks.

Methods and Materials

Study Area and Period

The study was conducted in Kombolcha woreda with in East-Harergie Zone of Oromia National Regional State (ONRS) from September 21 to October 2, 2017. The fact that this woreda has been selected as a study area, it was one of the district that has been experiencing AWD outbreak for the time being. Including the study area, Kombolcha woreda, the zone has fifteen administrative woredas. Geographically, Kombolcha district borders on the south by the Harari Region, on the southwest by Haramaya, on the northwest by Dire Dawa, on the north by the Somali Region, and on the east by Jarso.

Kombolcha district is located 542 km east of Addis Ababa with latitude 42° 07' 0'' E and longitude of 9° 25' 60'' N; Where Mucha, Babo and Lalu are amongst the highest points. According to the 2010 Oromia Regional Health Bureau Woreda Base Plan Estimate, the total population of the district has expected to be 152,462 of which about 77,270 were male and the rest 75,192 were female. With an estimated area of 441.1 square kilometers, the district has an estimated population density of 346 people per square kilometer.

A survey of the land in Kombolcha shows that 16.8% is arable or cultivable, 1.7% pasture, 3.9% forest, and the remaining 77.6% is considered built up, degraded or otherwise unusable. Khat, fruits and vegetables are important cash crops. About 19.5% of the urban and 4.7% of the rural population have access to drinking water.

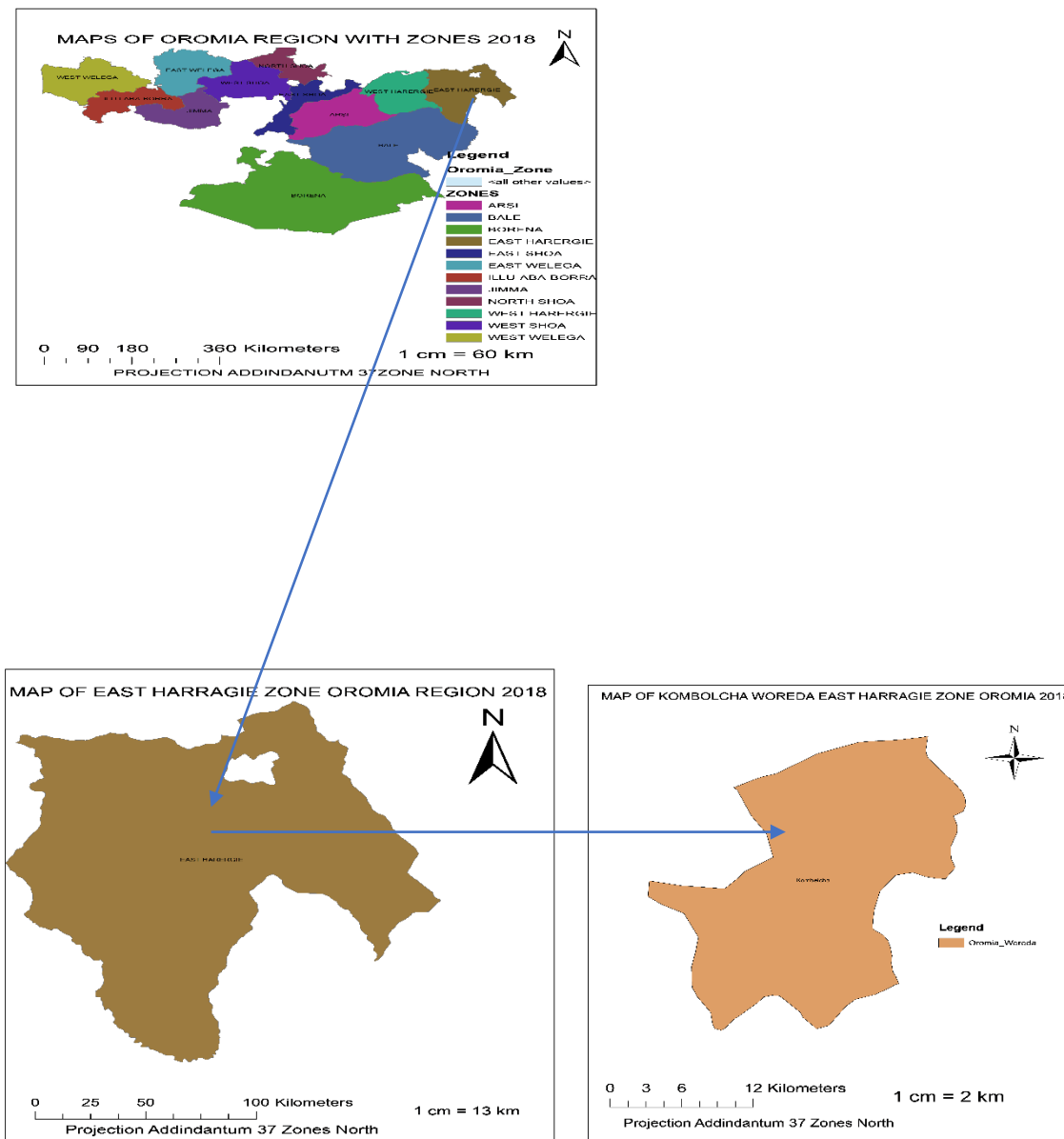


Figure 1 Map of Kombolcha woreda, East Harargie zone, Oromia 2018.

Study Design and Sampling

We interviewed the district's health office head and Public Health Emergence Management (PHEM) officers to obtain information on the outbreak and preliminary data on those affected. We reviewed surveillance data and an IDS line list- for reporting from health facility to woreda Kombolcha/Zone and for use during epidemics from 09 August 2009 to 21 September 2010

EFY. Retrospective unmatched case-control study was also conducted on 21 cases and 42 controls. The Cases were directly identified from the registered line list form and two controls for each case were selected by location of residency with in the community. Choosing unmatched retrospective study type and reaching to the indicated size of controls and cases is just for making the study simple and visible.

Target Population: The target population was all people living in Kombolcha woreda, East Hararegie Zone, Oromia during the study period.

Source Population: The source population for this study was the total population who live in the study woreda and AWD outbreak affected Kebeles.

Study Population: The study population was 63 sampled participants (21 cases and 42 controls) that are found in the source population.

Selection of Cases and Controls

Selection of Cases: A case is defined as any person with a confirmed AWD result (confirmed vibrio cholerae with RDT/culture) or a case that fulfilled the case definition of AWD/ cholera without laboratory confirmation whose age ≥ 5 years old and admitted to Cholera treatment center (CTC) of the affected woreda during the epidemic period.

Cases were retrospectively identified from previously generated IDS line list for AWD cases by Kombolcha woreda PHEM officers. The cases were selected consecutively after having confirmation of their address from those affected kebeles of the selected woreda until the required sample (21) cases were obtained.

Selection of Control: Control defined as any person whose age of 5 years old and above and had not suffered with AWD during the outbreak period but randomly selected from the residence of the community in which those of the confirmed cases had been lived.

To select the control group, cases are identified first. Following the identification of cases, the investigation team went to the residential area based on obtained address from the cased patient and randomly selects the control households and then starts interviewing the control by obtaining

informed verbal consent if he/she fulfilled the criteria. This same procedure was used for all participant subjects until the required numbers of controls have been met.

Inclusion and Exclusion Criteria

Inclusion Criteria: The study includes as participants those individual living in Kombolcha woreda of Oromia Region with AWD or had epidemiological linkage with confirmed AWD cases during the outbreak period and those randomly selected controls from the residency of the community in which the cases live.

Exclusion Criteria: Persons not resident in the community of Kombolcha woreda, East Harargie zone, Oromia.

Sample Size Calculation: A sample size of 63 (21 cases and 42 controls) was calculated using the method by Kelsey et al. in Epi- Info version 7.2. This was calculated based on an alpha of 0.05, at two-sided confidence level of 95%, power of 80% and assuming 68% prevalence of exposure among controls to detect at least odd ratio of 42.

Study Variables

Dependent Variables: cases and controls

Independent Variables: Includes the variables like sex, age, marital status, educational status, occupation, residential area, date of onset, date of admission/hospitalization, and risk factors include: food source, water source both domestic use and drinking, latrine use, washing practice, contact & clinical history and knowledge.

Data Collection Techniques

As a data collection technique, first we used to make interview of the concerned bodies at all visited sites like the regional, zone and district health management teams. We reviewed records of cases (line list, HMIS registration book and patient admission cards).

Semi structured questionnaires were used to collect socio demographic variables, clinical & contact history, water source, feeding & washing practice, latrine use and knowledge level from the cases and controls (or parents/care givers if the case or control was a child). The questionnaire was customized from National Institute for Communicable Diseases which was

prepared as cholera case investigation form. Those administered questions were touched issues like age, sex, marital status, sources of water for drinking and household consumption, commonly used food, type of toilet use, hand washing practices and knowledge of the participants between August and September 2017.

Data Management and Analysis

Data was cleaned, checked for consistency and made the necessary correction (s) manually during collection. And also entered and analyzed on computer using Epi-info version 7 and Excel statistical software packages.

Ethical Consideration

Ethical clearance was obtained from Oromia Regional Health Bureau. A letter was written for woreda health office as a form of supportive document in order to obtain approval on data collection. Informed oral consent was obtained from all study participants or their parents/care givers before go through the intended interview. Confidentiality was assured and thus the information that the participants provided was not known to others.

Case Definitions

Suspected case: A patient age 5 years or more who develops profuse watery diarrhea with or without vomiting.

Confirmed case: A patient age 5 years or more with clinical presentation of profuse watery diarrhea with or without vomiting and confirmed as presence of 01 or/and 0139 *Vibrio cholerae* sero-types by RDT or culture in the laboratory.

Result

Descriptive Epidemiology

Based on the reviewed IDS-line list-for reporting from health facility to woreda/zone and for use during epidemics of the district, a total of 193 AWD cases has been registered and reported throughout the epidemic period from Kombolcha woreda of East Harargie Zone, Oromia. Of those total cases, 189 were had been admitted and got cured with in the district immediately established CTC and AWD isolation rooms and also known that 09 cases were died (05 cases in

their resident & 04 cases in CTC). The epidemics' Attack and Case Fatality Rate were 0.13 and 4.6 respectively.

According to the district Health Office PHEM AWD 2017 annual report the outbreak initially seen 15th August 2017, reached at pick level on 19th August 2017 and end on 9th September 2017. The first case or index case was identified on 18th August 2017 (or 12/12/2009) under Kombolcha HC, Malkaa raafuu 01 Kebele. The figure below shows trend of AWD cases by date of onset during the epidemic period.

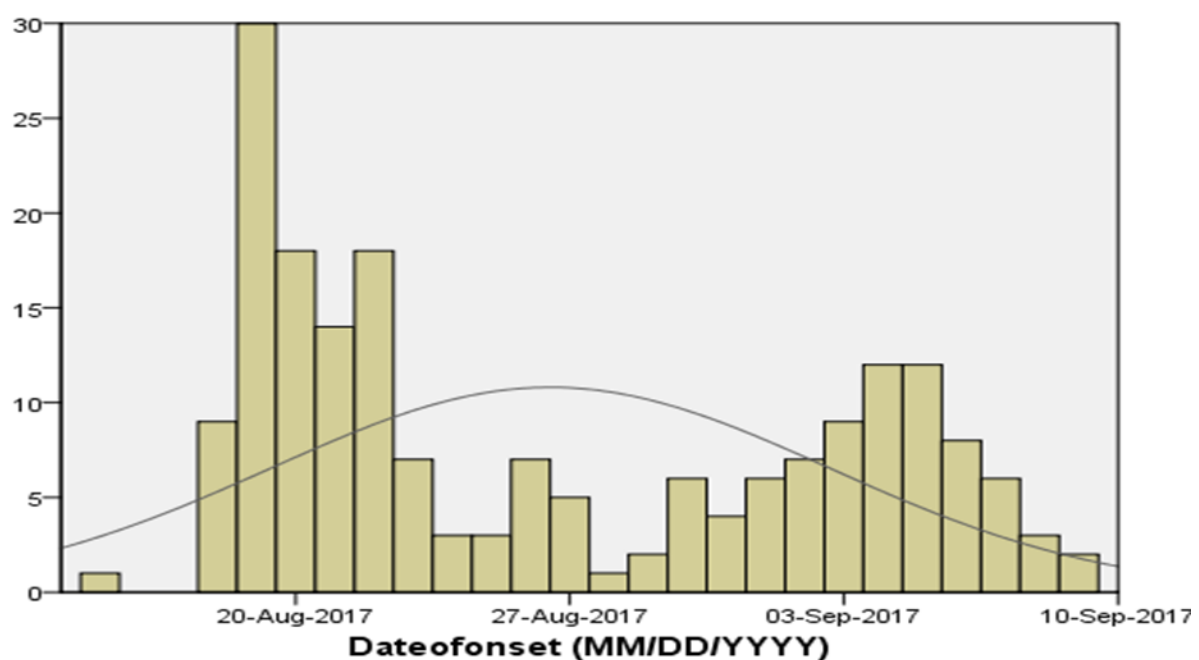


Figure 2 Trends of AWD cases by date of onset, Kombolcha woreda, East Harargie zone, Oromia-2017.

In our finding, it was possible to see that the outbreak attacked all age groups and both sexes but their mixes were different. For instance, in observing sex distribution of the outbreak, it was clearly seen that more males were going to be attacked, that means males affected portion reached to 58%.

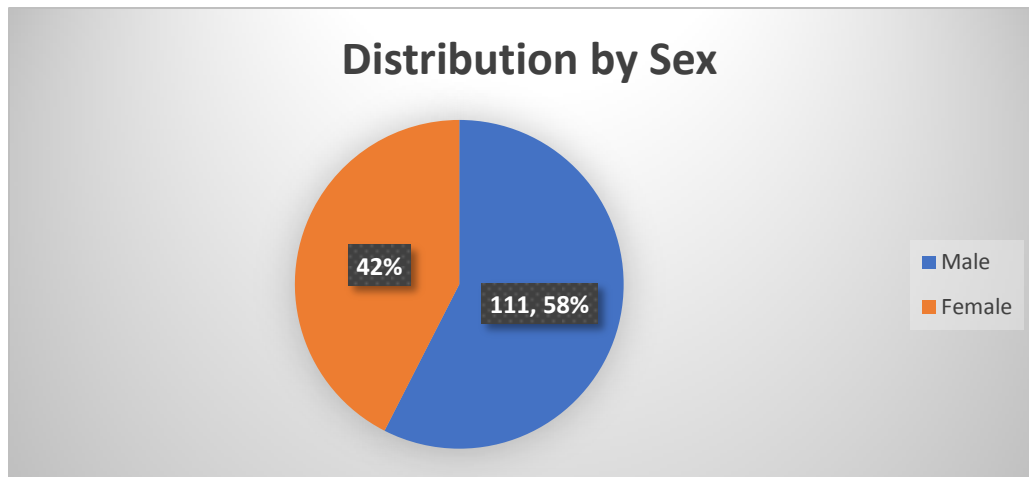


Figure 3 AWD cases distribution by Sex in the year 2017, Kombolcha woreda, East Harargie zone, Oromia.

Similarly, when we see the age distribution, 25-44 years old age group showed a weighted percentage than the other age groups, which mean that this age group showed a 48% coverage as illustrated clearly below.

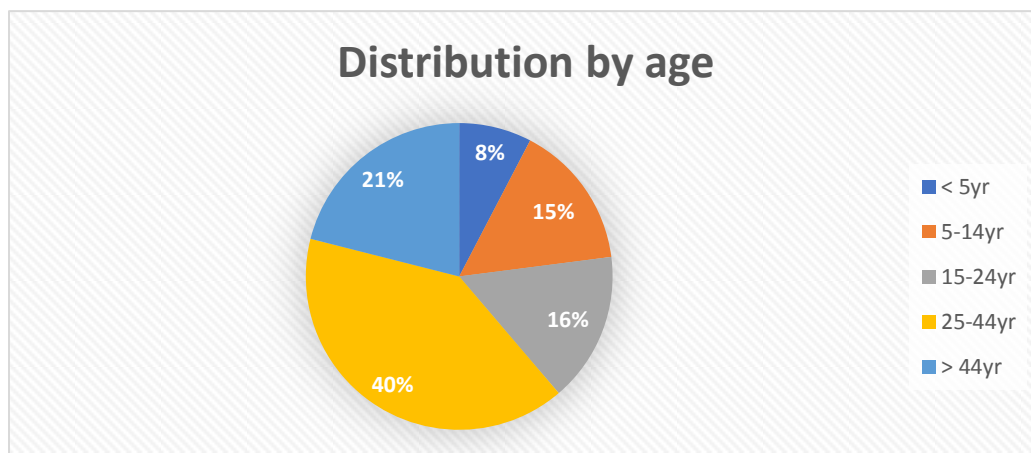


Figure 4. AWD cases distribution by Age in the year 2017, Kombolcha woreda, East Harargie zone, Oromia.

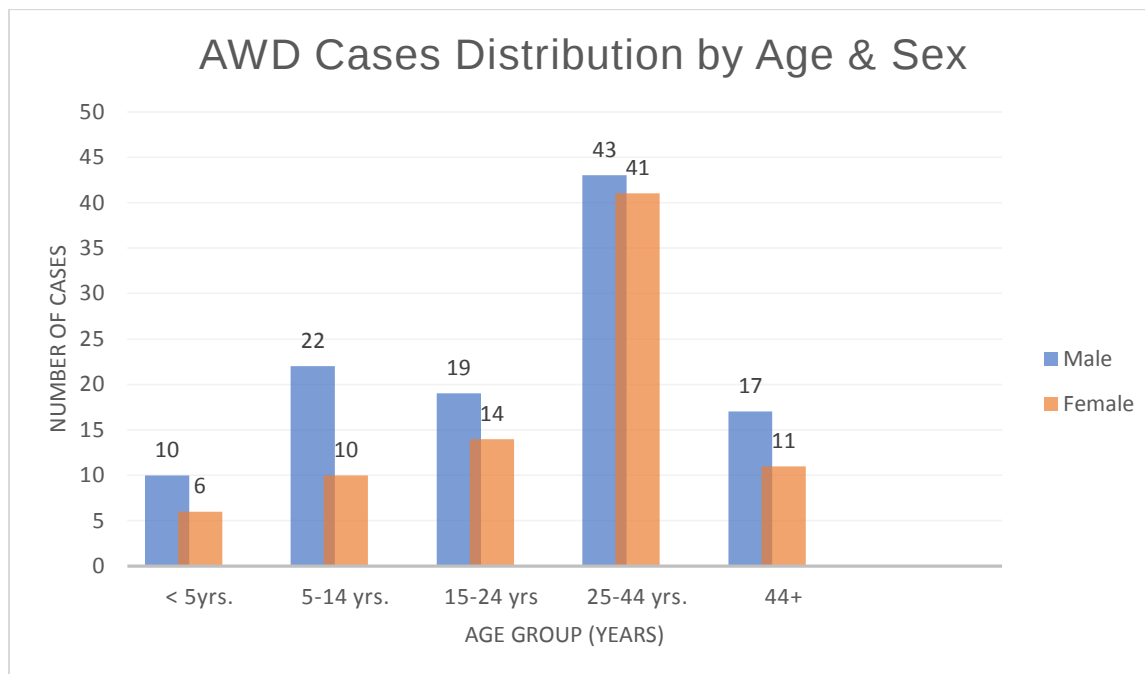


Figure 5 Distribution of AWD cases by age and sex in Kombolcha woreda, East Harargie zone-2017.

The finding also showed AWD distribution by Kebele (or village). Among the total 22 Kebeles or villages of the district, 75% (or 17 Kebeles) were attacked by the current outbreak, though that its distribution vary from village to village. The highest cases were reported from Malka Raafuu o1 kebele and the lowest cases from Ijaginna, Iftooha and Xaaxeesaa Kebeles

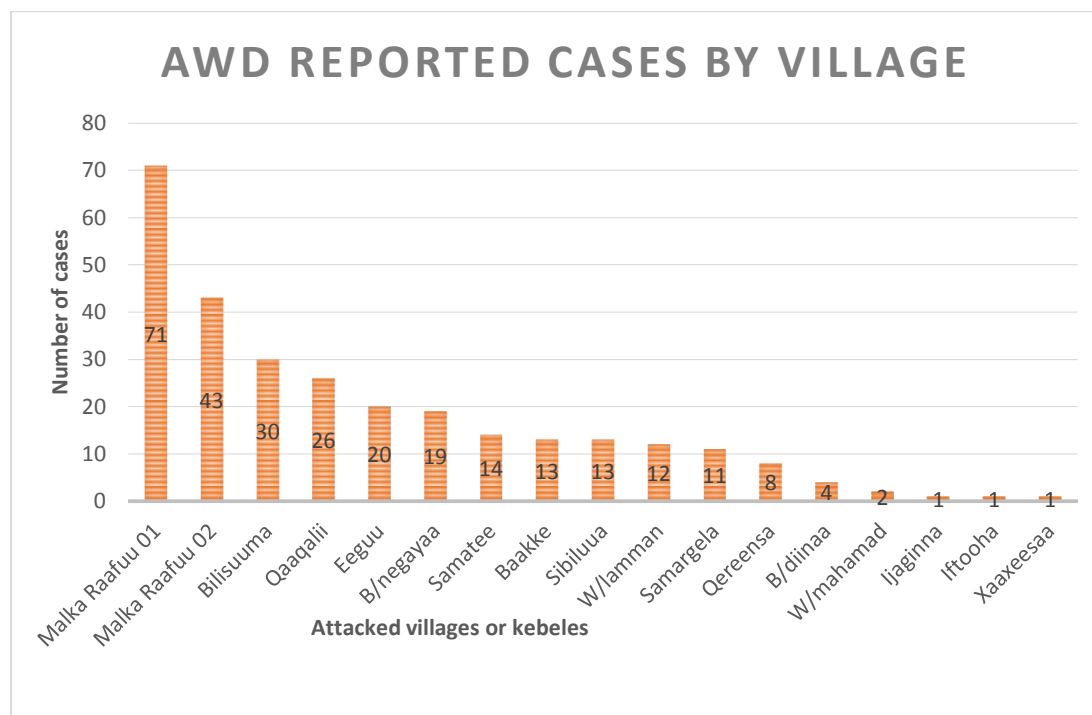


Figure 6 AWD cases distribution by village in Kombalcha woreda, Oromia-2017.

Analytic Epidemiology

We recruited 63 participants (21 cases and 42 controls) for this case control study. The age range among cases was 10- 70 years and that of the controls 8-65 years. The mean age for cases and controls were 26 and 27 years old respectively. Males took the highest portion from the case participants, which took 61% (or 13/21) and that of females in the controls participants, 52% (or 22/42).

Factors Associated with AWD

Customized questionnaires have been provided to participants in assessing possible risk and protective factors associated with AWD disease and transmission. Travel and contact history, water source, feeding practice, latrine use, washing practice and knowledge were the main focus areas.

To determine whether those selected exposure independent variables do have any possible or strong associations, go through with statistically important analysis process was a required step. Accordingly, a stepwise bivariate and binary logistic regression analyses were done.

Table 1: Bivariate analysis result of selected exposures among AWD cases and controls in Kombolcha woreda, East Harargie zone, Oromia-2017.

Risk factors	Category	Case (n=21)	Control (n=42)	Crude OR, at 95% C.I.	P-Value
Age group	5-14	2(9.5%)	3(9%)	1.25 (0.1,13.2)	0.85
	15-24	8(38%)	18 (43%)	1.1(0.2,7)	0.9
	25-44	9(43%)	15 (36%)	1.5 (0.2,9.4)	0.6
	>44	2(9.5%)	5(12%)	Reference	-
Sex	Female	8 (38%)	22 (52%)	0.6(0.2,1.6)	0.28
	Male	13(62%)	20(48%)	Reference	-
Occupation	Self-Employ	0(0%)	5(12%)	Undefined	0.111
	Student	4(19%)	9(21%)	0.7(0.07,5.7)	0.7
	Daily laborer	5(24%)	2(5%)	3.75 (0.3,42)	0.276
	Farmer	4(19%)	5(12%)	1.2 (0.13,11)	0.87
	No work	6(29%)	18(43%)	0.5(0.06,3.7)	0.47
	Employed (gov. & non-gov.)	2(9.5%)	3(7%)	Reference	-
Travel history	Yes	4(19%)	8(19%)	1(0.3, 4)	1.000
	No	17(81%)	34(81%)	Reference	-
Contact history	Yes	8(38%)	5(12%)	4.5 (1.3, 16)	0.015*
	No	13(62%)	37(88%)	Reference	-
Water source and feeding practice					
Water Source (Drinking & other house hold consumption)	Well	1(5%)	7 (17%)	0.3 (0.03, 2)	0.181*
	Pond	11 (52%)	12 (29%)	2.7 (0.9, 8)	0.064*
	Pipe water	7 (33%)	22 (52%)	Reference	-
	Other	2(10%)	1(2%)	4 (0.4, 50)	0.209
Treating Water	Yes	10 (48%)	20 (48%)	1 (0.3, 3)	1.000
	No	11 (52%)	22 (52%)	Reference	-
Cleaning Water Container Regularly	Yes	9 (43%)	31 (74%)	0.3 (0.09, 0.8)	0.016*
	No	12 (57%)	11 (26%)	Reference	-
Eating “Enjera with Wot”	Yes	1 (5%)	1 (2%)	2 (0.1, 34)	0.6
	No	20 (95%)	41 (98%)	Reference	-
Eating food outside	Yes	5 (22%)	18 (40%)	0.4 (0.1, 1)	0.138*
	No	16 (78%)	24 (60%)	Reference	-
Meat	Yes	10 (48%)	10 (24%)	2.9 (0.9, 9)	0.055*
	No	11 (52%)	32 (76%)	Reference	-
Milk and milk product	Yes	5 (24%)	19 (45%)	0.3 (0.1, 1)	0.098*
	No	16 (76%)	23 (55%)	Reference	-
Fruit	Yes	8 (38%)	18 (43%)	0.8 (0.3, 2)	0.7
	No	13 (62%)	24 (57%)	Reference	-
Vegetables	Yes	12 (57%)	21 (50%)	1.3 (0.4, 4)	0.59
	No	9 (43%)	21 (50%)	Reference	-
Types of latrine in use	Common latrine	9 (43%)	2 (5%)	15 (2.8, 79)	0.0002*
	Private latrine	7 (33%)	27 (64%)	Reference	-
	Others	5 (24%)	13 (31%)	1.5 (0.4, 6)	0.6
Using soap for Hand Washing	Yes	2 (10%)	15 (36%)	0.19 (0.04, 0.9)	0.027*
	No	19 (90%)	27 (64%)	Reference	-
Knowledge about AWD	Yes	18 (86%)	36 (86%)	1 (0.2, 4.5)	1.000
	No	3 (14%)	6 (14%)	Reference	-

*significant level at p value 80 %,

The bivariate analysis result indicated that risk factors such as client contact history, using well and pond water source, common latrine uses in compound, eating food outside, consuming meat, milk and milk product and protective factors such as cleaning water container regularly and using soap always for hand washing practice do have some strong association with contracting and preventing AWD at P-value < 0.2.

And it is also showed that the risk factors like travel history, consuming fruit, vegetables and “Enjera with Wot” and the protective factors like using pipe water source, water treatment, private latrine uses and knowledge about how AWD contracting & its transmission do not have any strong association with AWD at that P value.

In identifying statistically significant risk and protective factors from those of the independent variables that showed some strong associations in bivariate analysis, further assessment with multivariable logistic regression was continued.

Table 2 Multivariable binary logistic regression analysis result of selected exposures among AWD cases and controls in Kombolcha woreda, East Harargie zone, Oromia-2017.

Risk factors	Category	Case (n=21)	Control (n=42)	Crude OR, at 95% C. I.	Adjusted OR	P-Value
Contact History	Yes	8(38%)	5(12%)	4.5(1,16)	<u>60 (4, 84)</u>	<u>0.0024**</u>
	No	13(62%)	37(88%)	Reference	-	-
Using Pond water	Yes	11(52%)	12(29%)	2.7(0.9,8)	<u>12 (3,14)</u>	<u>0.0092**</u>
	No	10(48%)	30(71%)	Reference	-	-
Using Well	Yes	1(5%)	7(17%)	0.3(0.03,2)	33 (0.5,54)	0.1015
	No	20(95%)	35(83%)	Reference	-	-
Cleaning Water Container Regularly	Yes	9(43%)	31(74%)	0.3(0.08,1)	0.4 (0.04,3)	0.3617
	No	12(57%)	11(26%)	Reference	-	-
Eating food outside	Yes	5(22%)	18(78%)	0.4(0.1,1)	<u>0.1(0.05,0.9)</u>	<u>0.0423**</u>
	No	16(40%)	24(60%)	Reference	-	-
Meat	Yes	10(48%)	10(24%)	2.9(0.9,9)	11(0.6,19)	0.0993
	No	11(52%)	32(76%)	Reference	-	-
Milk and Milk product	Yes	5(24%)	19(45%)	0.3(0.1,1)	0.2(0.02,2)	0.2087
	No	16(76%)	23(55%)	Reference	-	-
Private Latrine	Yes	7(33%)	27(64%)	0.3(0.09,0.8)	2 (0.2, 25)	0.4698
	No	14(67%)	15(36%)	Reference	-	-
Common Latrine	Yes	9(43%)	2(5%)	15(2.8,79)	<u>46 (2, 114)</u>	<u>0.0202**</u>
	No	12(57%)	40(95%)	Reference	-	-
Using soap for hand washing	Yes	2(10%)	15(36%)	0.19(0.04,0.9)	0.1(0.01,2)	0.1455
	No	19(90%)	27(64%)	Reference	-	-

** Significant level at p value 5%

The multivariable binary logistic regression result showed that the following four factors do have statistically significant linkage with AWD acquiring.

1. Having contact history 60 times more likely risky in acquiring AWD as compared to no contact with AWD cases [AOD=60; 95% CI: 4-84, P-Value: 0.0024].
2. Using pond water for drinking & other house hold consumption 12 times more likely risky in acquiring AWD as compared to non-pond water uses. [AOD=12; 95% CI: 3-14, P-Value: 0.0092].
3. Eating food outside 0.1 times more likely risky in acquiring AWD as compared to those who don't have eating food outside. [AOD=0.1; 95% CI: 0.05-0.9, P-Value: 0.0423].
4. Common latrine user in compound 46 times more likely risky in acquiring AWD as compared to those who don't use common latrine [AOD=46; 95% CI: 2-114, P-Value: 0.0202].

Laboratory Result

Two of the five stool specimen that was sent to Harari Regional laboratory for dipstick and culture identification was confirmed positive for vibrio cholerae. And those of the two confirmed positive samples were obtained from Burqa Nagayaa and Malkaa Raafuu 01 Kebeles of Kombolcha woreda.

Discussion

Our study focused mainly on identifying the most affected population in the woreda and the possible risk factors for the outbreak. Based on the finding we know that, the epidemic curve indicated that the outbreak was seen first at 15th August 2017, reached at pick level immediately after 4 days on 19th August 2017. This suggests that the disease is highly contagious and has person to person transmission.

The epidemics' attack rate was 0.13 which is lower than AWD outbreak in Afar Region, Ethiopia, 2009 [7] and its case fatality rate which is equal to 4.6 is higher as compared to this similar study. The case fatality rate is high as compared to the WHO guideline; that is supposed to be less than 1% (WHO, 2004).

The study also revealed that, AWD outbreak affected more male than female. This is in line with unmatched community-based case-control study conducted in Greater Accra, Ghana, 2014[9]

and Afar region, Ethiopia, 2009 [7]. In contrary, other unmatched case control studies which was conducted in the Buea health district, Cameroon, 2015 [10] showed that females population were more affected as we compared to the males' counterpart. The possible assumption for this finding is that the function of male's behavior since males are more likely consuming foods and drink outside their home and as well more mobile as compared to females.

Age is also a concern in talking about AWD disease. Accordingly, our study showed that the age category of 25-44 years old is the most affected age group. This shows a slight near resemblance with the findings documented in a case control study of Greater Accra, 2014 Ghana; which says people in age of 20-29 are most affected.

Risk factors like contact history, using pond water for drinking and other house hold consumption, eating food outside and common latrine use in the compound had shown statistically significant association with AWD in the multivariable binary logistic regression of our study. (Table 2)

In contrast, a research on Epidemiology of Acute Watery Diarrhea Outbreak and Challenges of Control—Afar, Ethiopia, 2009 indicated that the risk factors, such as not hand washing after latrine usage, drinking untreated water, access to latrine (unsanitary latrines) and contact to a case and visiting someone with similar illness had shown statistically significant association with AWD.

Limitation of the Study

- It was difficult to recruit our sample size as expected due to security issue and being late in joining the epidemic investigation team.
- Some of the cases were interviewed more than two weeks after treatment, which could have resulted in recall bias.
- The controls could not get any confirmed laboratory result that they were free of AWD and this leads case ascertainment bias.

Conclusion

The current AWD outbreak in Kombolcha Woreda, East Harargie Zone was found highly contagious in nature and has a more person to person transmission. Male and the age group of 25-44 years old community members were more prone to the outbreak.

In addition to this, the factors like contact history, using pond water for drinking and other household consumption, eating food outside and common latrine use in the compound have been riskier for contracting AWD.

Finally, there was undoubted raise in the epidemic case fatality rate and even it was higher than the recommended WHO guideline.

Recommendation

- Early investigation and rapid response activities are crucial steps in the control of further spread and tackling an extended outbreak. So woreda and zonal level health sector officials do their best effort on this regard.
- Awareness creation on the prevention and control of AWD & other diarrheal diseases has to be done by the district health professional (UHEW), Public and communication office, influential bodies and the like.
- In order to reduce the risk of AWD, governmental and non-governmental organizations are expected to work on proper excreta disposal and safe water supply.
- Contact history which is one of the exposing factors needed to be avoided as much as possible.
- Case management also continues as early as possible.
- The epidemic surveillance system should be strengthened.

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1.2 Scabies Outbreak Investigation in Dire Dawa City Administration, Eastern Ethiopia 2018.

Abstract

Background: Scabies is a contagious skin disease caused by infestation with a highly infectious microscopic mite, *Sarcoptes scabiei*. It is a common public health problem, occurs worldwide with an approximate 130 million cases each year and also a problem where there is social disruption, overcrowding and personal hygiene is poor. Current report of Dire Dawa administrative health bureau indicated that scabies has been occurred above the normal threshold level and has turned to be one of the public health concern. Thus, investigation has to be done in order to assess risk factors associated with this outbreak and undertake appropriate public health control measures.

Methods: Unmatched community-based descriptive case-control study design was employed to identify potential risk factors for scabies. We used a structured questionnaire to collect information like socio demographic characteristics, clinical history of the disease, possible risk factors and knowledge of respondents about the scabies. The data was entered, cleaned and analyzed using EPI Info version 7.2.0.1 and Microsoft Office Excel 2016.

Result: In Dire Dawa City Administration a total of 09 urban and 38 rural Kebeles exist. Out of which 13 Kebeles (28%) are going to be affected with the current scabies outbreak. A total of 302 suspected scabies cases was identified from 3 Kebeles of the administration city starting 5th of Feb. to 30th of May, 2018. The overall attack rate of specific scabies affected kebeles was 0.7 with no scabies related death. Male suspected scabies has coverage of 55% or 165 in absolute figure, the mean age was 11 years and it ranges from 6 months to 94 years. The sex category depict that more male sex has gone be affected. The analysis also showed that the age group 5-14 year was the most affected group with an AR of 0.9 per 1000 population and having five and above family size AOR=4.8; (95% CI: 1.6-14.5, P-Value: 0.0053) and facing water shortage AOR=3.4; (95% CI: 1-10, P-Value: 0.02) were a triggering scabies risk factors.

Conclusion: Scabies has occurred as an outbreak in specific Kebeles of Dire Dawa City Administration with an attack rate of < 15%. It primarily affected male sex and school age children whose age found in the category of 5-14 yrs. Due to delayed notification and response activities, the disease transmitted among many people and it remained as an epidemic without reporting for more than 2 months period.

Key Words: Scabies, outbreak, Dire Dawa Administration and Ethiopia.

Introduction

Scabies is a contagious skin disease caused by infestation with a highly infectious microscopic mite, *Sarcoptes scabiei*. The mite that has less than 1mm in size burrows into the skin, leads to intense itching and visible sores. This intense scratching triggered by scabies infection also allows to occur secondary bacterial skin infection (*Streptococcus pyogenes* and *Staphylococcus aureus*). (1)

It is usually spreads by direct and prolonged skin-to-skin contact with a person who has scabies. Contact generally must be prolonged; a quick handshake or hug usually will not spread scabies. It is also spread easily to sexual partners and household members. Scabies sometimes spreads indirectly by sharing articles such as clothing, towels, or bedding used by an infested person. (2)

This an ecto-parasitic infestation of the skin, as above try to describe, clinically present as an itchy rash which worsen at night. The rash found particularly around the fingers, wrists, elbows and armpits. In infants, it may also be on the head, neck, palms and soles. Immunocompromised persons may have crusted lesions with many mites on any part of the body. Diagnosis is made through a combination of history of intense itching (especially at night), a classic rash and the identification of mites from scrapings of affected skin. Skin scrapings are obtained with a scalpel and placed on a slide with mineral oil and examined microscopically for eggs, mature and immature mites and fecal pellets. (3)

The infestation may present in three ways: classical, atypical, and crusted. Classical presentation is the most common form of scabies symptoms. It is characterized by intense pruritus (itching), erythematous (red rash) and papular (bumpy) eruptions, pustules (pus-filled lesions), and nodules. Atypical scabies presentation is uncommon. Patients with atypical presentation include the very young, elderly, debilitated, and immune-compromised. Symptoms may include excessive hyperpigmentation (skin coloring), scaly rash, and pyoderma (infection of the skin). Crusted scabies or Norwegian scabies is a rare, highly contagious infestation of mites. Erythema (red rash), hyperkeratosis (thickening of the skin), alopecia (hair loss), hyperpigmentation (excessive skin coloring), pyoderma (skin infection), and eosinophilia (increase of white blood cells usually related to allergic response or parasitic infection) may be present. This condition

can be the cause of large epidemics of conventional scabies in long-term care and other facilities. (4)

Scabies symptoms in persons without previous exposure usually develop in four to six weeks. Sensitized persons, who were previously infected with scabies, will usually develop symptoms in one to four days of post exposure. (4, 5)

Scabies is a common public health problem, occurs worldwide with an approximate 130 million cases each year and its incidence can increase during natural and manmade disasters. It is particularly a problem where there is social disruption, overcrowding and where personal hygiene is poor. Immunosuppression, poor nutritional status, homelessness and dementia are also risk factors. (6)

Currently, the Dire Dawa administrative Health Bureau PHEM department informed that scabies is becoming beyond sporadic clinical cases, affecting wide population groups and turned to a public health concern especially in some specific areas of the administrative; namely Wahil, Duguma and Halobus Kebeles. Hence, the city administration health bureau officially declared that scabies occurred as an outbreak and requires massive public mobilization and public health emergency interventions.

Objectives

General objective

- ❖ To investigate scabies suspected outbreak, assess risk factors associated with this outbreak and undertake appropriate public health control measures, in Dire Dawa City Administrative of Ethiopia, May 2018.

Specific objectives

- ❖ To verify the existence of scabies outbreak in the administrative City
- ❖ To describe the outbreak in terms of person, place and time
- ❖ To identify the associated risk factors contributing for the outbreak
- ❖ To take possible public health control measures against the outbreak.

Methods and Materials

Study area and Population

The outbreak investigation was conducted in Dire Dawa City Administrative starting from 16-31 May of 2018. The City Administrative divided in 09 operational Woredas, 09 urban and 38 rural Kebeles. There is 01 referral and 01 primary hospitals, 15 health centers and 34 health posts. There were 122 urban and 188 rural health extension workers (310 HEWs) and 1061 other health professionals working in Dire Dawa administrative with potential health service coverage of 100%. The Administrative has a projected total population of 478, 596 for the year 2017/18.

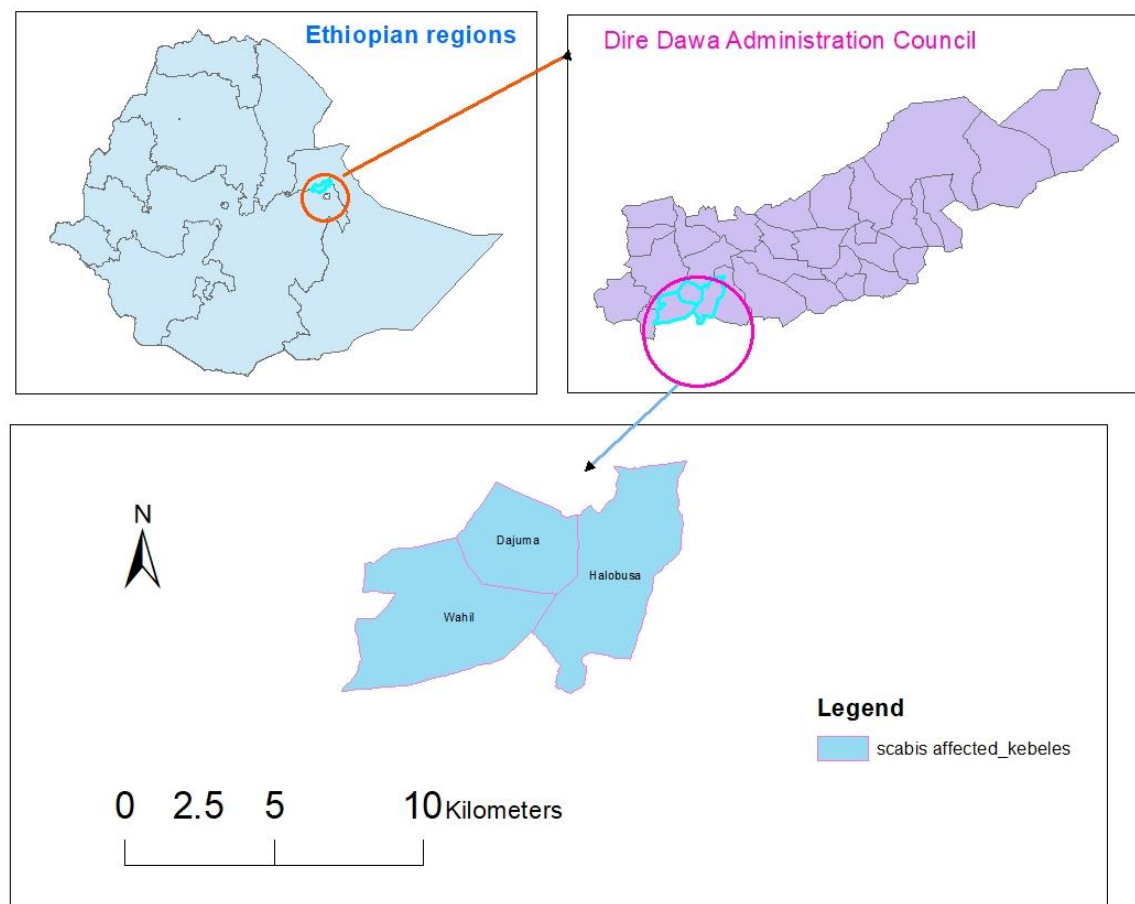


Figure 7. Map of Dire Dawa City Administration, Eastern Ethiopia, May 2018.

Study design

Unmatched community-based descriptive case-control study design was employed to identify potential risk factors for scabies. Cases were individuals who had a history of intense itching (especially at night), and a classic rash in Wihil, Dujuma, Halobusa and Biyo Awale Kebeles of Dire Dawa administrative from 16 to 30 May of 2018. Controls were individuals who are living within the above scabies affected Kebeles of Dire Dawa and had no a history of intense itching and classic rash in the same specified period.

Source population

People reside in Dire Dawa administration, Eastern Ethiopian part.

Study Population

Study population of the investigation was all scabies cases in affected Kebeles of Dire Dawa City Administration, fulfills the standard case definition and the controls that was selected when they are not diseased.

Data collection

We used a structured questionnaire, which is adapted from different literatures, to collect data including socio demographic characteristics, clinical history of the disease, possible risk factors and knowledge of respondents about the scabies. The data were collected through face-to-face interview with individual respondents. Line list of cases was also used for further analysis

Data analysis procedures

The data was entered, cleaned and analyzed using EPI Info version 7.2.0.1 and Microsoft Office Excel 2016. Arc map was also used for administrative area of the study. Results were presented using descriptive tables and charts. Attack rate, P-value and 95% confidence interval (CI) Odds ratio (OR) were used for deciding the significance of the associations.

Inclusion criteria

Cases: Any residents in scabies outbreak affected Kebeles of Dire Dawa administration and selected for investigation that fulfills case definitions of scabies and epidemiologically linked cases and had symptoms of scabies from 16 to 30 May of 2018; who agreed to participate and accessible in the study was included.

Controls: A control was any resident of Dire Dawa administration scabies affected Kebeles during the study period and who did not develop signs and symptoms of scabies and agreed to participate was included.

Exclusion criteria

Cases: Those cases that refused to participate, inaccessible or were not conscious and family members in the same house hold were excluded.

Controls: Those who refused to participate were excluded as well as family members from same house hold.

Ethical issues

A support letter was obtained from Dire Dawa administrative Bureau and as this was an emergency epidemic investigation conducted as part of public health intervention, no ethical approval was obtained. Oral informed consent was obtained from participants or from their parents to participate in the study. Confidentiality was assured and no personal details were recorded or produced in this documentation.

Data dissemination

Written report will be prepared and shared to Addis Ababa University, School of Public Health, Field epidemiology training program resident advisors, mentors and coordinators and Dire dawa administrative health bureau PHEM core process.

Study Variables

Dependent variable: scabies infestation and secondary infection

Independent variables- Socio demographic (example; age, sex, occupation, marital status...), scabies knowledge, contact history, source of water for personal hygiene and other purposes, over-crowding and others.

Standard Case Definitions

- **Suspected case:** A person with signs and symptoms consistent with scabies.
- **Confirmed case:** A person who has a skin scraping in which mites, mite eggs or mite feces have been identified by a trained health care professional.
- **Contact:** A person without signs and symptoms consistent with scabies who has had direct contact (particularly prolonged, direct, skin-to-skin contact) with a suspected or confirmed case in the two months preceding the onset of scabies signs and symptoms with the case.

Epidemiologically linked case: - Is a suspected case, which has contacts with laboratory confirmed case or another epidemiologically confirmed case.

Index case: -Suspected or confirmed scabies case (case that met the criteria for standard scabies case definition) that initiates the public health attention (may or may not visit health facility) and of course, the first case who possibly the source of infection for the other cases emerging.

Operational Definitions

Mild: 5 or less of body part affect by lesion or sore

Moderate: 6-10 of body part affect by lesion or sore

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

Very severe: 50 or more of body part affect by lesion or sore

Knowledge Good: The participants who answered the most accepted truth about transmission, Risk factors and control measures of Scabies scores one point for each question. The Responder scores equals to or greater than the mean score of the series of nine knowledge question (Mean = 3.2 with SD of 1.6) compared to each other is considered as to have a good knowledge on transmission, Risk factors and control measures of Scabies.

Knowledge Poor: The Responder scores less than the mean score of the series of nine knowledge question (Mean = 3.2 with SD of 1.6) compared to each other is considered as to have a poor knowledge on transmission, Risk factors and control measures of Scabies.

Result

Dire Dawa City Administration Current Update

The Dire Dawa administrative council consists of the city of Dire Dawa and the surrounding rural areas. The council has no administrative zones but has nine operational woredas. Those operational woredas again sub divided into 09 urban and 38 rural Kebeles. Dire Dawa, the capital city of the administrative council is found at a distance of 515 Kilometres from Addis Ababa and is located in the eastern part of the country, enclosed by the State of Somalia and the State of Oromia.

The administration has an estimated area of 128,802 hectares. According to 2017/8 woreda base plan population estimate, the total population was 478,596. The proportion of males and females is about 48 to 52 percent, respectively. The urban residents of the administrative council number 324,477 while its rural residents 154,119. Besides, there were 103,556 households in Dire Dawa administrative council with an average of 4.6 persons per household.

The city administration also comprised of 01 referral and 01 primary hospitals, 15 health centers and 34 health posts. There were 122 urban and 188 rural health extension workers (310 HEWs) and 1061 other health professionals working for the major health care services activity of the resident.

Recently, the administrative health bureau PHEM department, informed that scabies has been occurred at large scale in city administration. Especially, in specific rural kebeles where there is extreme water shortage and significant nutritional problem, it exists above the normal threshold level, affecting a larger population group and is turned to be a major public health concern. The limited WASH intervention, in addition to the existing scarce water supply may further worsen the disease expansion and severity among the vulnerable.

As we can understand from the line list recent reported scabies data together with the field visit observation of four highly affected of rural kebeles, namely Dujuma, Wahil, Hallo Busa and Biyo Awale and Sporadic cases report from adjacent kebeles, indicated that the expected estimate cases of scabies is beyond 500 with a 10% prevalence in some specific rural kebeles/villages.

Table 3. Number of scabies reported cases from most affected Kebeles/Villages since the beginning of 2018, Dire Dawa, Ethiopia

Region	Scabies affected Operational Woredas	Kebeles/ Villages	# Cases Reported in 2018	Total population	Attack rate
Dire Dawa	Wahil Operational Woreda Catchment	Wahil HC	25	6,714	0.4
		Dujuma	278	2,426	11.5
		Halobussa	98	4,219	2.3
	Biyo Awale Operational Woreda Catchment	Biyo Awale	28	5,399	0.5
	Gende Kore Operational Woreda Catchment	Dechatu 06	7	23,439	0.0
	Addis Ketema Operational Woreda Catchment	Jelo Belina HC	11	7,039	0.2
	Lega Hare Operational Woreda Catchment	Lega Hare	4	4,696	0.1
	Melkajebdu Operational Woreda Catchment	Melka Jebdu (Kebele 01)	8	16,494	0.0
Regional total			459	70,427	0.7

Annex I, which attached at the end is presented to create a clear picture regarding the city administration's operational woredas as a whole including their catchments, total catchment population numbers for the year 2017 (or 2009 EFY), estimated catchment population for year 2018 (or 2010 EFY) based on 2018 (or 2010 EFY) growth rate and their respective estimated house hold sizes.

Descriptive Epidemiology

There is a clear understand among Dire Dawa Administrative Health Bureau PHEM department, scabies attacked operational woredas' health centers heads, surveillance focal and health supervisors that scabies appears as a sporadic case for long duration, gradually changing their trend and then turned to an epidemic since the beginning of Feb. 2018; however, it was notified to the central, EPHI after 2 months. Then after a team composed of different disciplines went to the city administration, joined with immediately established task forces for the outbreak response and prevention activities.

One of a team composition, cohort VIII Ethiopian Field Epidemiology Training Program (EFETP) residence of Addis Ababa University assigned to investigate the outbreak by FMOH in collaboration with EPHI and fully engaged in the task.

In this through investigation activity, we are trying to conduct a case control study taking into consideration a total of 302 suspected scabies cases line list updated report which bring from the limited health facilities of the city administration from 16th of May 2018 to 31st of May 2018. The overall attack rate of those specific scabies affected kebeles was 0.7 (7 cases per 1,000 populations) with no scabies related death (CFR=0)

Description of scabies cases by time

The current scabies outbreak which attack specific Kebeles of the administrative council initially seen as a sporadic case and it remains as it is for an extended period. Different rumors being forwarded for the epidemic by the local community and as well by health professionals. The Communities believed that recent outbreak originated from Muslim religious boarding students, "Derasa" which are coming from Kalcha Kebele of Biya Awale operationa woreda. Professional consider last year East Harergie zone extended scabies outbreak as a primary source.

In analyzing this scabies case infestation with time, we have an understanding that the earliest cases started to occur since 05 February 2018. The cases obviously seen at large scale in March

2018 and also notified that it has been occurred as an outbreak & investigation has been initiated on late April and beginning of May 2018 (See figure 8).

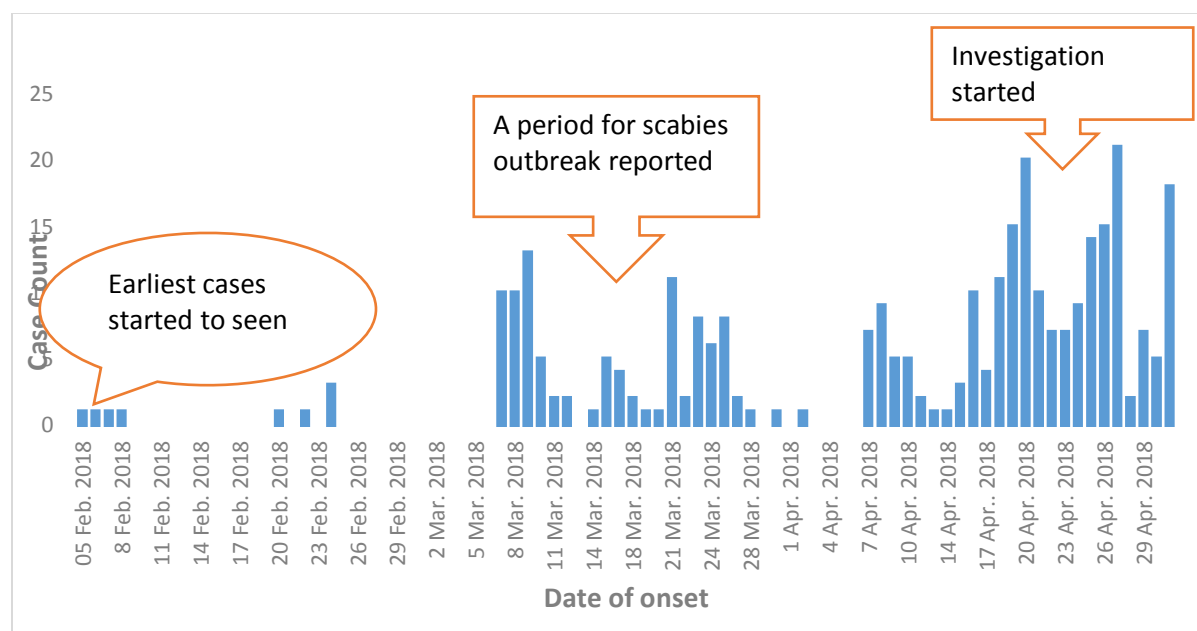


Figure 8. Number of scabies cases by date of onset in Dire Dawa Administration, Eastern Ethiopia, 2018.

Description of scabies cases by place

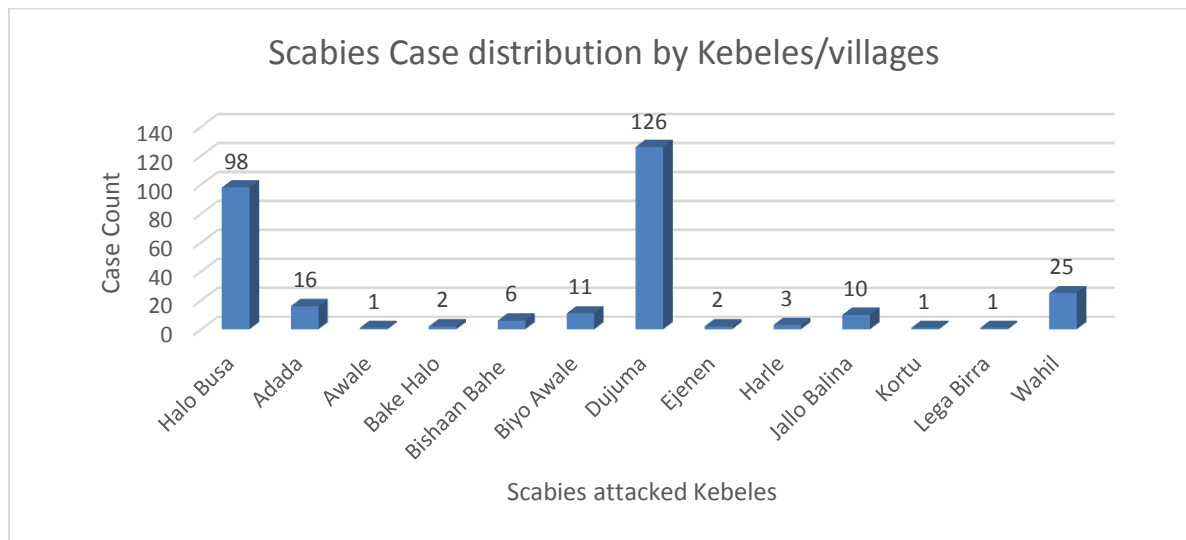
In Dire Dawa City Administration a total of 09 urban and 38 rural Kebeles exist. Out of which 13 Kebeles (28%) are going to be affected with the current scabies outbreak. The attack rate varies from kebele to kebele, ranges from 0.01% to 5.9%. The highest attack was in Dujuma Kebele, 5.9%. Then Hallo Busa and Wahil Kebeles will take the next two levels with the respective attack rates of 2.32% & 0.37%.

Observe the following table for detail scabies cases distribution by kebeles/villages and their specific attack rates.

Table 4. Distribution of scabies cases by Kebeles of Dire Dawa Administration, Ethiopia, 2018.

Kebeles	Total Population	No of Scabies Cases	Attack Rate
Hallo Busa	4219	98	2.32
Adada	8129	16	0.20
Awale	9944	1	0.01
Bake Halo	6113	2	0.03
Bishaan Bahe	4956	6	0.12
Biyo Awale	5399	11	0.20
Dujuma	2426	126	5.19
Ejenen	3839	2	0.05
Harle	5985	3	0.05
Jello Balina	7039	10	0.14
Kortu	3341	1	0.03
Lega Birra	2393	1	0.04
Wahil	6714	25	0.37
Total	70,497	305	0.43

The graph below also supports us to captured better understanding about scabies outbreak distribution by place in Dire Dawa city administration.

**Figure 9.** Scabies case distribution by administrative Kebeles in Dire Dawa, Ethiopia, 2018.

Description of scabies cases by person

Out of the total 302 reported suspected scabies cases, 165 (55%) of them were males (figure-9). This implies that males were a highly attacked group than females; the reason behind may be a more contact exposure level at field play like footballs, school games and similar like activities of male sex as compared to female.

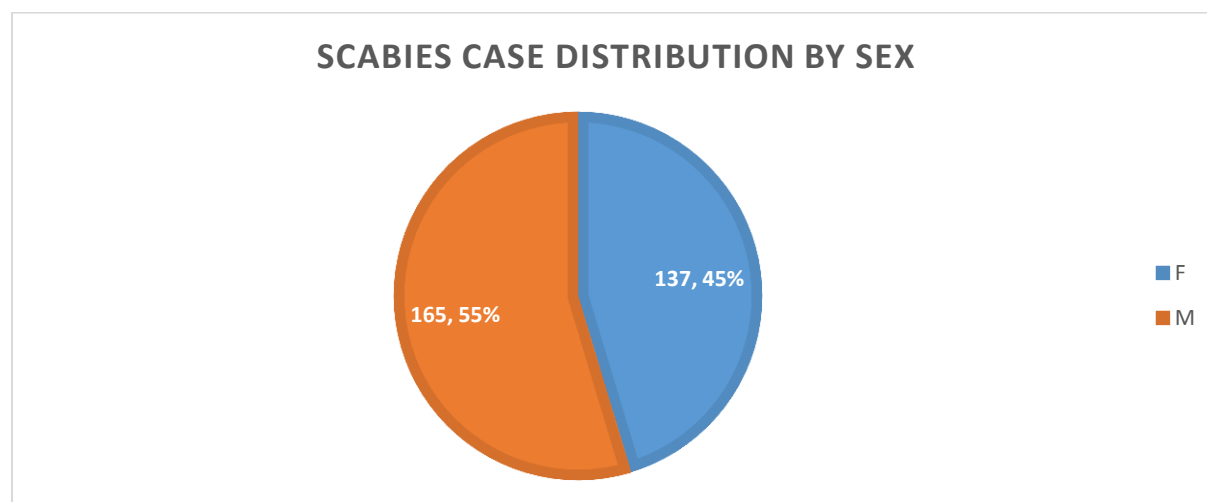


Figure 10. The proportion of scabies cases by sex in Dire Dawa Administrative, Ethiopia, May, 2018.

Age specific scabies case distribution also seen by considering the city administration total age specific population as risk population. Accordingly, we observed that the age group 5-14 year is the most affected with an AR of 2.23 per 1000 population and it is followed by 0-4 age group which accounts for 0.18 per 1000 population (Table-4).

Table 5. Scabies attack rate by different age groups of Dire Dawa Administration, May, 2018.

Age Groups	Population	Number of Cases	Attack rate per 1000 population
0-4	78,484	38	0.48
5-14	94,186	210	2.23
15 -44	181,306	48	0.26
45 and above	124,620	6	0.05
Total	478,596	302	0.63

The graph below provided in understand scabies cases distribution on the bases of sex and age classification.

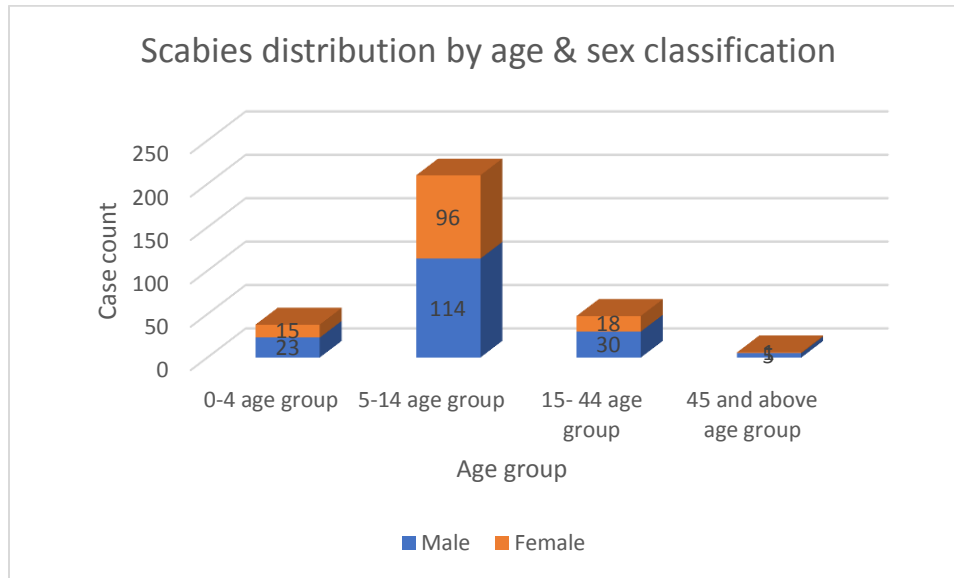


Figure 11. Scabies case distribution by age and sex categories, Dire Dawa, 2018.

The chart below also provided in support of illustrating study participants family size distribution which have a statistically significant association with the acquiring of scabies infestation. As we look the pie chart 71% of the study participants have 4-6 family size.

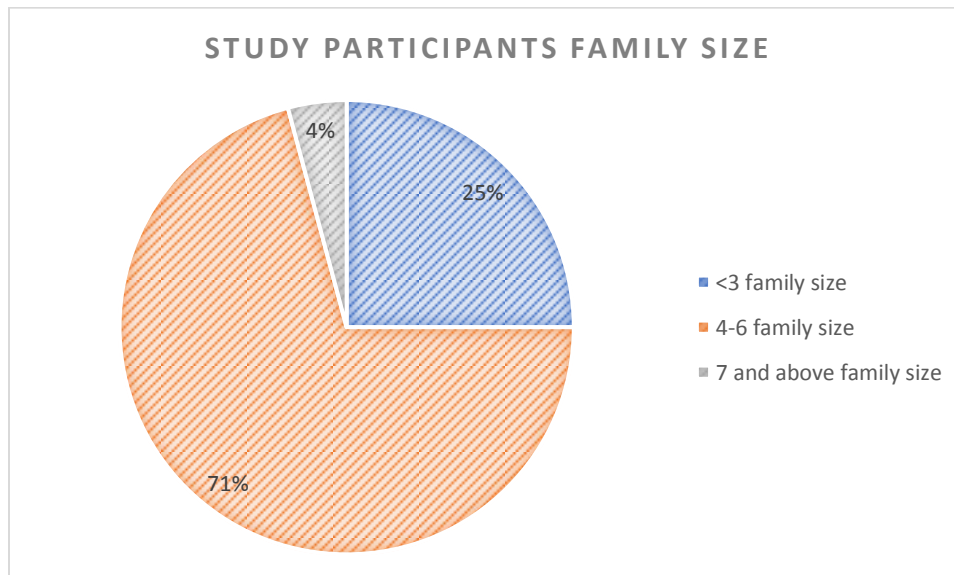


Figure 12. Family size distribution of study participants, Dire Dawa, 2018.

In this analysis, we could also possible to see different parts of the body that mostly affected by scabies infestation. Accordingly, we take an understanding that sides and webs of fingers was the most affected part.

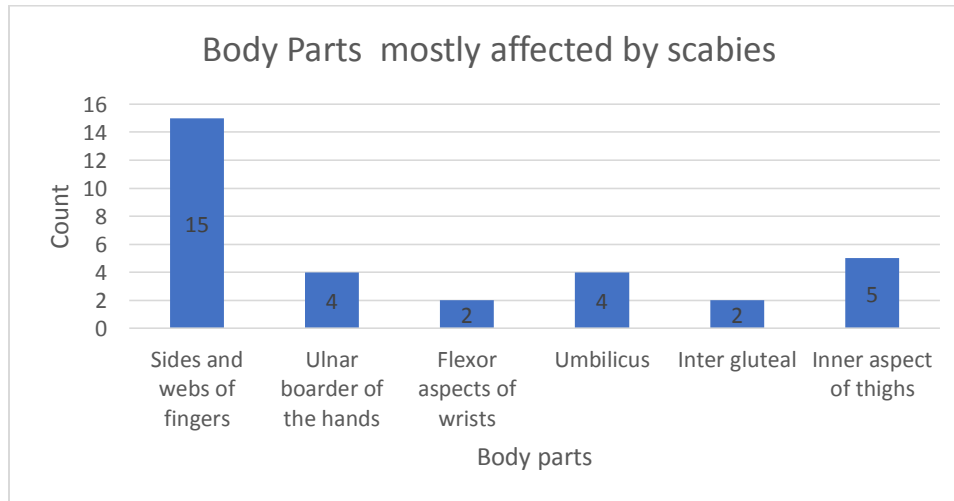


Figure 13. Different body parts which affected by scabies infestation, Dire Dawa, 2018.

As we observe from field visit, most affected populations were children in the primary school and most of them show sign of secondary infection attributable to scabies.

The following two pictures indicate scabies case infestation with secondary bacterial skin infection that is captured during the investigation visits.



Figure 14. Picture of active scabies case which picked from field Visit of Dujuma Kebeles Dire Dawa Administration, 2018.



Figure 15. Picture of active scabies case which picked from field Visit of Hallo Busa Kebeles Dire Dawa Administration, 2018.

Analytic epidemiology

We recruited 96 study participants (32 scabies cases and 64 controls) for this study. Female took the dominate position in the control participants, 53%. On the other side, that means on cases participants, the dominancy received by that of male sex, has coverage of 56%. The school age children which lied between 5-14years group took the largest portion from the whole participants, has coverage of 47%.

The risk variables like five and above family size house hold [COR=3.7, 95% CI, (1.4,9.8)], Previous scabies exposure history [COR=6.9, 95% CI, (1.3,36.6)] and water shortage for personal hygiene and other uses [COR=2.6, 95% CI, (1.03, 6.76)] have been known strong association with acquiring of scabies infestation and also knowledge about scabies transmission, risk factors and control measure has significant protection contribution [COR=2.1, 95% CI, (0.9-5.1)] in the already executed bivariate analysis. Age and sex have no any statistical significance at $p\text{-value} \leq 0.05$

Table 6. Bivariate analysis of risk and protective factor for Scabies outbreak in Dire dawa City Administration, Eastern Ethiopia, 2018.

Variables	Category	Case (n=32)	Control (n=64)	COR (95% CI)	P Value
Knowledge level	Poor	20 (62%)	28 (44%)	2.1 (0.9,5.1)	<u>0.003</u>
	Good	12 (38%)	36 (56%)	Reference	
Educational status	Secondary education (9-12 grades)	0 (0%)	2 (3%)	Undefined	0.265
	Primary school (1-8 grades)	19 (61%)	37 (61%)	0.8 (0.3, 2.0)	0.629
	Reading and writing only	1(3%)	5 (8%)	0.3 (0.03, 3.0)	0.292
	No education at all	11 (35%)	17 (28%)	Reference	
Family size	5 & Above household members	13 (41%)	10 (16%)	3.7(1.4,9.8)	<u>0.006</u>
	Under 5 household members	19 (59%)	54 (84%)	Reference	
Previous scabies history	Yes	6 (19%)	2 (3%)	6.9(1.3,36.6)	<u>0.010</u>
	No	26 (81%)	62 (97%)	Reference	
Sleeping status	With other	19 (59%)	42 (65%)	0.8 (0.3,1.8)	0.548
	Alone	13 (40%)	22 (34%)	Reference	
Frequency of body bath	More than a week	25 (78%)	39 (63%)	Undefined	0.425
	Weekly	7 (22%)	22 (35%)	Undefined	0.574
	2-3 days	0 (0%)	1 (2%)	Reference	
Frequency for washing clothes	More than a week	25 (78%)	43 (69%)	Undefined	0.447
	Every week	7 (22%)	18 (29%)	Undefined	0.536
	Less than a week	0(0%)	1 (2%)	Reference	
Water shortage	Yes	24 (75%)	33 (54%)	2.6 (1.03, 6.76)	<u>0.040</u>
	No	8 (25%)	29 (46%)	Reference	
Sex	Female	14 (43%)	34 (53%)	0.7 (0.3, 1.6)	0.386
	Male	18 (56%)	30 (46%)	Reference	
Age groups	25 and above years	5 (16%)	10 (16%)	Undefined	0.182
	15-24 years	7 (22%)	28 (44%)	Undefined	0.058
	5-14 years	19 (59%)	26 (41%)	Undefined	0.249
	< 5yrs	1 (3%)	0 (0%)	Reference	

Those of the above statistically significant variables in bivariate analysis bring to multivariate logistic regression analysis for further analysis and also able to identified some of the riskier variables that remained statistically significant and have strong association with scabies infestation.

Table 7. Multivariate logistic regression analysis of risk and protective factors of scabies in Dire Dawa city Administration, Easter Ethiopia, 2018.

Variables	Category	Case (n=32)	Control (n=64)	AOR (95% CI)	P-Value
Knowledge	Poor	20 (62%)	28 (44%)	2.4242 (0.9, 6.5)	0.0802
	Good	12 (38%)	36 (56%)	Reference	
Family size	5 and above household member	13 (41%)	10 (16%)	<u>4.8148 (1.6, 14.5)</u>	<u>0.0053</u>
	Under 5 household members	19 (59%)	54 (84%)	Reference	
Previous scabies history	Yes	6 (19%)	2 (3%)	0.2579 (0.1, 1.4)	0.1251
	No	26 (81%)	62 (97%)	Reference	
Water shortage	Yes	24 (75%)	33 (54%)	<u>3.3726 (1.1, 10.1)</u>	<u>0.0297</u>
	No	8 (25%)	29 (46%)	Reference	

As we understand from the above multivariate logistic regression analysis result, the risk factors that still showed statistically strong association with scabies infestation are family size of 5 and above household members and water shortage for hygienic cares and other uses.

1. Having five and above family size (or house hold members) 4.8 more likely risky in acquiring scabies infestation as compared to having a family size of less than 5 house hold members. [AOD=4.8; 95% CI: 1.6-14.5, P-Value: 0.0053].

2. Facing water shortage for personal hygiene and other uses is 3.4 more likely risky in developing scabies as compared to better access of water. [AOD=3.4; 95% CI: 1-10, P-Value: 0.02].

Intervention Undertaken

According to the Ethiopian 2015, Interim-Guideline for multi-sectorial scabies outbreak emergency response, cases should manage with mass treatment protocol (treat contacts and other community members except children < 2 yrs, Pregnant women and lactating mothers) when its prevalence > 15% in village/Kebeles/Woredas in which the outbreak seen. When the prevalence rate < 15%, the guide line advises individual case treatment and contacts (family member).

However, the current Dire Dawa administration scabies cases scenario indicated that its prevalence less than 15% and it is suggested that the intervention scheme should focus on treating individual cases and contacts.

Drugs used for management of scabies

There are two routes of anti-scabies drugs application to treat scabies

1. Systemic or oral scabicide in the form of tablets: Ivermectin
2. Application of a topical scabicide in the form of ointments, lotions, or cream.
(5% Permethrin, 12.5 to 25% Benzyl Benzoate Lotion and Sulfur (5%-10%) ointment).

Major activities to be done

- Over all coordination of the activities
 - Reactivation of regional tax force
 - Technical working group formation
 - ✚ WASH team
 - ✚ Social mobilization team
 - ✚ Surveillance and case management team
 - ✚ Logistic team
 - ✚ Monitoring and evaluation team
- Case and contacts management

- Strengthen surveillance activities (active case searching, documentation, communicating report using line list & provide feedback)
- Mobilization and distribution of supplies
 - Drugs
 - Body and laundry soaps etc
- Capacity building
 - Sensitization of key actors/advocacy
 - Provide on job and basic trainings for HEW & HWs on scabies outbreak management protocol
- WASH activities
 - Ensuring access to safe water supply
 - Availing hygiene and sanitary supplies
- Social mobilization and BCC campaign using different mechanisms
 - Provide health education using available opportunities including schools, CBOs, religious institutions, market places etc.
 - Use Audio Vans to disseminate information on treatment days and key prevention messages.
 - Disseminate key messages through regional/community media using preferred media
 - Disseminate the available Job aids for HEWs, HDA/WDA/DAs to support interpersonal communication
- Monitoring and Evaluation
 - Conduct regular meetings at all level
 - Communicate the situation to all concerned
 - Conduct supportive supervision and follow up
 - Provide feedback and take corrective measures

Discussion

The investigation is mainly done to identify the possible risk factors for contracting scabies. The study shows 165 (or 55%) were males. This finding showed a slight increment as compared to the finding that is obtained from similar study in Pakistan, which was 46%.

Delay in notification and response activities gave an opportunity for the diseases to affect large number of residents in two specific kebeles and expanded to adjacent neighborhood kebeles. This lately notification or it remained without reporting for more than 02 months might be due to the fact that scabies was not included by the surveillance system and the health care providers considered it as it was not reportable. Besides scabies has no disease specific reporting format and it was reported with similar classification of illness with other skin disorders under the health management information system.

Our investigation result indicated that the age group 5-14 year was the most affected with an attack rate of 0.9 per 1000 population followed by 15 and above age group which accounts 2 per 1000 population. The reason behind that these age groups more affected than the rest age groups might be due to most of them are children in the primary school and have longer period contact each other's.

In the crude and adjusted analysis, having five and above family size (or house hold members) and facing water shortage for personal hygiene practice and other uses were significantly associated with scabies. This might be due to that the natural mode of transmission of the diseases follows close contact as result of overcrowding and the like situations and water availability plays a great role in keeping personal hygiene.

The outbreak was reported 2 months later of the onset of the illness and intervention was delayed until recent period. The first reason for this was health care providers were not informed that scabies should be reported as public health important problem. The other reasons were an extreme level shortage of drug and supply to manage the outbreak and also lack of recent experience in intervening scabies outbreak.

Conclusion

Scabies has occurred as an outbreak in specific Kebeles of Dire Dawa City Administration, Eastern Ethiopia with an attack rate of $< 15\%$. It primarily affected male sex and school age children whose age found in the category of 5-14 yrs. group.

Water shortage for personal hygiene practice and other uses and an increase in family size of five and above have their own impact on the administrative scabies outbreak. A delayed notification and response activities made the disease transmitted among many people and it remained as an epidemic.

Health care provider information gap regarding reporting of scabies cases as public health important problem and lack of recent experience in managing scabies were a clear challenge. Additionally, extreme level drug and supply shortage also occurred as other visible challenge in tackling the epidemic.

Recommendation

- ❖ Health care providers of the administrative unit should provide individual case and contact treatment campaign in all of the affected kebeles with two rounds of treatment.
- ❖ Individual case and contact treatment, prevention and control mechanism and awareness creation strategies were implemented in school set up in collaboration with education bureau.
- ❖ We also recommend in enhancing strong ongoing active case search surveillance of scabies; health education on treatment and prevention of scabies with in the community. (By health care provider of city administration)
- ❖ The administrative health bureau has provided awareness creation regarding scabies as public health important problem and should also establish a mechanism to include scabies under the public health emergency management reporting system.

- ❖ Availing important drugs and supplies in managing the epidemic is a required step of the administrative health bureau.
- ❖ The city municipality has to work availability of enough water supplies.

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Chapter II- Surveillance Data Analysis Report

2.1 Surveillance Data Analysis of Bacillary Dysentery Cases in Addis Ketema Sub City Health Office, Addis Ababa, Ethiopia (2013-2015)

Abstract

Background: Bacillary dysentery, one of the food borne diseases is an acute bacterial infection involving the large and distal small intestines, and is characterized by small-volume, loose stools or diarrhea. In our country and other developing nations adequate and reliable information on this food borne diseases is lacking, and thus those foods borne diseases including bacillary dysentery is considered as one of the public health problem. Therefore, making a kind of surveillance trend analysis of bacillary dysentery is essential to track the disease status.

Objective: The main objective of this document is to determine and describe the magnitude and trends of bacillary dysentery cases in Addis ketema sub city, for the years 2013-2015 G.C.

Methods and Materials: The data was reviewed and collected from different documented data sources and also by directly asking information from concerned body. It was both Addis Ababa Health Bureau and Addis Ketema sub city Public Health Emergency Management offices were the sources for this secondary data. Descriptive retrospective study was conducted. MS Word and MS Excel were mainly used to organize, analyze and interpret those data and tables, graphs, phrases and short statements were served for further description.

Result: For the period January 2012 to December 2016, a total of 9,146 dysentery cases were reported from all facilities of the sub city. The highest cases, which is equal 25% or 2265 cases were reported in the year 2013 and the lowest that is equal to 13% or 1155 were reported in the year 2016. The proportion of dysentery case per 1000 population also varies from 5.6 to 8 in each respective year. The highest, which is equal to 8 cases/1000 population seen in the year 2013 whereas the lowest, that is equal to 5.6/1000 population is observed in the year 2015. Death and case fatality rate of dysentery is equal to zero for the all analysis period.

Conclusion: The burden of weekly reportable diseases like bacillary dysentery cases is so high in all health facilities of the sub city and the sub city geographic area which is characterized by many slum area, overcrowded, low socio-economic status, shortage of latrine and poor sewerage system by itself also major contributing factors for the increase in this disease burden.

Introduction

Background

Outbreaks of any disease can only be detected early if a system for observing and reporting disease has been established. This is called disease surveillance. A simple case record (showing the date, name, age and address of each patient; the clinical DIAGNOSIS; and the treatment provided) should be kept at every health facility and information from case records should be reported regularly to the local health authorities. This would ensure that outbreaks of epidemics were detected early. (1)

Diarrheal disease continues to be an important cause of morbidity and mortality among young children in developing countries including Ethiopia. It is a fourth cause of death, mortality worldwide, and is ranked second being a cause of years of productive life lost due to premature mortality and disability. (1, 2)

There are more than 250 different food borne diseases which cause diarrhea in world wide. Most of these diseases are infectious, caused by a variety of bacteria, viruses, and parasites. Other food borne diseases can be poisonings, caused by harmful toxins or chemicals like poisonous mushrooms and enterotoxins of some bacteria. Candidate bacteria for this are *Salmonella*, *Campylobacter*, *Listeria*, pathogenic *Escherichia coli* (*E. coli*), *Yersinia*, *Shigella*, *Enterobacter* and *Citrobacter*. (2)

Dysentery (shigellosis) which is an acute bacterial infection involving the large and distal small intestine - is one of the most dangerous types of diarrhea. It is characterized by small-volume, loose blood and mucus contained stools and are associated with fever, nausea, vomiting, abdominal cramps and rectal pain (tenesmus). (2)

In general, it is more severe and more likely to result in death than other forms of acute diarrhea. A large-scale outbreak (epidemics) of dysentery is a particular threat to public health. The death rate can be as high as 15 per cent. Even when correctly treated, about 5 per cent of people with dysentery can die during an epidemic. The bacterium responsible for epidemic dysentery is *Shigella dysenteriae* type 1 (Sd1) (3).

Asymptomatic and mild infections occur, many cases presenting as watery diarrhea. Uncomplicated disease is usually self-limiting and resolves in 4–7 days. Complications include intestinal perforation, toxic megacolon, rectal prolapse, Haemolytic Uraemic Syndrome (HUS) and convulsions (in young children).

There are 4 species of *Shigella*: *Shigella dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei* (also referred to as group A, B, C, and D, respectively). Several distinct serotypes are recognized with in the first 3 species. *S. dysenteriae* is one of four species of *Shigella*, Disease caused by Sd1 tends to be more common in infants, and elderly and malnourished people. Mortality is also highest in these groups. (1, 2, 3)

Worldwide, *Shigella* is estimated to cause 80–165 million cases of disease and 600,000 deaths annually. *Shigella* spp. are endemic in temperate and tropical climates. (4)

Shigellosis is predominantly caused by *S. sonnei* in industrialized countries, whereas *S. flexneri* prevails in the developing world. Infections caused by *S. boydii* and *S. dysenteriae* are less common globally but can make up a substantial proportion of *Shigella* spp. isolated in sub-Saharan Africa and South Asia. (4, 5)

Transmission occurs via the fecal-oral route, through direct person-to-person contact, or indirectly through contaminated food, water, or fomites. Since as few as 10 organisms can cause infection, shigellosis is easily transmitted and can be acquired during short-term travel. Only humans and higher primates carry *Shigella*. (4,5)

In the United States, *S. sonnei* infection is usually transmitted through interpersonal contact, particularly among young children and their caregivers. Foodborne outbreaks have been linked to contaminated foods commonly consumed raw, as well as infected food handlers. Outbreaks have also been traced to contaminated drinking water, swimming in contaminated water, and sexual contract between men (4).

Statement of the problem

In developing countries, like Ethiopia in which communities live overcrowded situations diarrheal disease outbreaks are common where poor hygiene, unsanitary conditions, and unsafe water supplies are present and such living conditions create an environment in which diarrheal pathogens are easily transmitted. The most common ways of transmission in such outbreaks are food and waterborne via fecal oral route. Transmission of diarrheal pathogens through the food supply is a major problem both in the developing world and in the United States, where millions of cases are estimated to occur each year (2,4).

Shigellosis one of the causes of bloody diarrhea (stool) with mixed mucous is endemic throughout the world and is held responsible for the million cases of severe dysentery and death per year. Some of the risk factors for the increase burden of bacillary dysentery are population movement, overcrowding, and poor access to health, food shortages, and lack of safe water, poor sanitation and poor hygiene (5). These are also typical features of Addis Ketema sub city that would make prone in developing epidemic the community.

In addition to that lack of early recognition of the epidemic, inadequate laboratory facilities, supplies, and expertise, inappropriate antibiotic treatment, and poor understanding of the epidemiology of infections and the interaction of Shiga's bacillus with humans have led to the rapid and uncontrolled spread of infection (6)

In Ethiopia, and other developing countries adequate and reliable information on food borne diseases are lacking, and thus those foods borne diseases including Bacillary dysentery is considered as one of the public health problem.

Addis ketema sub-city is one of the ten sub cities in Addis Ababa. It is characterized by dense, overcrowded and poor socio-economic status and people are living under poor infrastructures and poor waste disposal and sewage system. The people are highly mobilizing. Because of these features, food born disease like bacillary dysentery can easily abrupt and change in to epidemic unless a timely appropriate action taken. Therefore, this kind of surveillance trend analysis of bacillary dysentery is essential to track the disease status of sub city.

Significance of the Study

Public health surveillance is the corner stone to produce health society in a way that early detecting of unusual trend of any disease and give immediate respond to it. To establish a good surveillance system at national level, well organized chain among woreda health office, sub city health office, regional health facilities, AAHB and FMOH is mandatory.

To strengthen disease surveillance in the country, Minster of Health established Public Health Emergency Management (PHEM) team since 2009 E.C. PHEM is one of the eight core processes of MOH and it is located in Ethiopian Public Health Institute (EPHI)

Accordingly, AAHB make its own effort and form PHEM case team at region level, extended to the ten sub cities' and to woredas' health bureaus.

Depending on this, I am interested to do a retrospective study on dysentery in Addis Ketema sub city. A selection criterion for doing the study is;

- High public burden
- It is epidemic prone disease and
- Possible to manage and prevent the disease at lower level.

Therefore, this data analysis will have intended to assess whether there is a good surveillance activity in Addis Ketema sub city and identify the trends of dysentery in the sub city in the past three years and compare it with the current status

Objectives

General Objective

- To determine and describe and the magnitude and trends of bacillary dysentery in Addis Ketema sub city, 2013-2015 G.C

Specific Objectives

- To describe the magnitude of bacillary dysentery in Addis ketema sub-city.
- To assesses the yearly trend of bacillary dysentery in the sub-city.
- To describe bacillary dysentery cases by person, place, and time.

Methods and Materials

Study Area

Addis Ababa lies 9°1'48"N latitude and 38°44'24"E longitude. The city is located at the heart of the country, at an altitude ranging from 2,100 meters at Akaki in the south to 3,000(9,800 ft.) meters at Entoto Hill in the North. This makes Addis Ababa the third highest city in the world, after La Paz and Quito in Latin America. Its time zone is categorized in East Africa Time (UTC+3). The city occupies a total area of 540 Sq. Km. (7)

Addis ketema sub cite which is one of the ten sub cities of Addis, located in the Northwest area of the city not too far from its center. It borders with the sub city of Gullele in the North, Arada in the East, Lideta in the South and Kolfe-Keranio in the West. According to 2007E.C. Population and Housing Census Report Addis Ketema sub city has a total of 255,092 populations, among this the number of female population is equal to 132,648 (52%) and the remaining are males, is 122,444 (48%). While sex ratio (number of males to number of female's population) is 0.92 in the indicated period. The population density of the sub city is 255,092 populations per kilometer square and the sub city covers 8.98 Sq. Km area and is sub divided in to 10 woredas. The number of health facility in the sub city are 1 governmental and 2 private hospitals and also have ten governments and 1 non-government health centers have giving service the public. (8)

Study Design and Period

All required data were collected, analyzed and interpreted from January 15 to March 09, 2017. Retrospective Descriptive study was conducted. Hard copy and Softcopy of documented data (Secondary data) were reviewed to generate different data. In addition, interviewing and discussion with concerned body were also have been made.

Population under Surveillance

Study populations were all residents live in Addis Ketema sub city. The size of estimated population includes 255,092 as of 2007 E.C. CSA Report.

Data Source

Aggregated data of bacillary dysentery cases were obtained from Addis Ketema sub city Public Health Emergency (PHEM) weekly surveillance report and the stored data base report of Addis Ababa Health Bureau (AAHB).

Data Collection Procedure

The data was collected from Addis Ketema sub city PHEM surveillance report and Addis Ababa health bureau stored data base surveillance report by searching and then filtering.

Data Analysis

MS Word 2016 and MS Excel 2016 were employed to compile, organize and analyze the collected data. Furthermore, tables, graphs and descriptive phrases or statements used to make the analysis sounder.

Case Definitions

Suspected: is a person with diarrhea with visible blood in the stool.

Conformed: suspected case with stool culture positive for shigella dysenteriae 1.

Dissemination of Finding

The results of the study were disseminated to Addis Ketema sub city health office, AAHB, Addis Ababa University (AAU) Healthy Science College and to different organizations which are interested on this data analysis.

Ethical Clearance

For ethical clearance an official letter was obtained from AAU SPH and then submitted to Addis Ketema sub city Health Office. The purpose of the study was so explained to the sub city officials and verbal consent is obtained to go through the study.

Result

Our finding in this surveillance data analysis investigation clearly indicated the sub city's immediately and weekly reportable disease status. Accordingly, we were able to well informed which disease condition put high burden in the sub city health facilities. The table below is provided as an illustration for the seven weekly reportable diseases status in Addis ketema sub city for the year January 2012 to December 2016.

Table 8. Weekly Reportable diseases total numbers for the year 2012-2016 in Addis Ketema sub city health office, Addis Ababa, Ethiopia.

Weekly Reportable Diseases	2012	2013	2014	2015	2016	Total
Acute Malnutrition	337	131	38	61	55	622
Dysentery	1902	2265	1623	2201	1155	<u>9,146</u>
Meningitis	1	1	2	0	0	4
Malaria	215	370	156	250	134	1,125
Relapsing Fever	31	17	18	24	66	156
Typhoid Fever	6950	8638	9024	9948	5338	<u>39,898</u>
Typhus	4646	6430	4683	4892	3223	<u>23,874</u>

Data source: Addis Ababa Regional Health Bureau.

As clearly observed from the table; typhus, typhoid fever and dysentery were the three-typical weekly reportable diseases that put high burden in the sub city's health facilities for period 2012 to 2016. The chart below also presented to see separately those three-typical weekly reportable diseases and create an understanding about their burden.

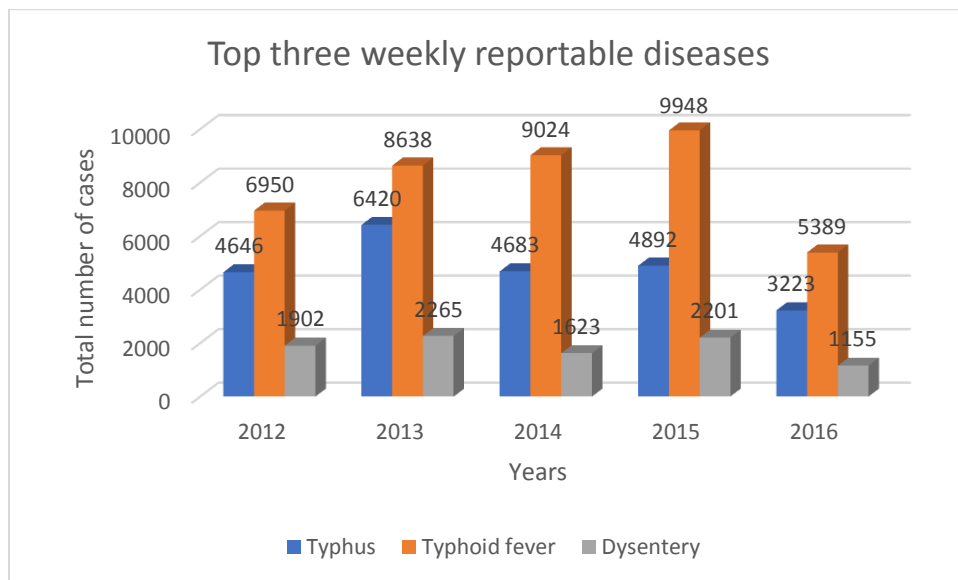


Figure 16. Total number of dysentery, typhus and typhoid fever cases in Addis Ketema sub city for the year 2012-2016, Addis Ababa, Ethiopia.

Data source: Addis Ababa Regional Health Bureau.

As the chart clearly depicted, typhoid fever and epidemic typhus have taken the first and second places; have gone done their analysis by other field epidemiology residences of my colleagues and dysentery which lied in the third place, is selected for my data analysis study by making through discussion with the sub city PHEM department.

Bacillary Dysentery cases description

Bacillary dysentery which is a focus of our surveillance data analysis is considered one of the major health problems of Addis ketema sub city since it is continuing to affect the sub city population at large scale and no significance improvement in observing its past years trends. When we see its distribution in the previous five subsequent periods (2012-2016), it has showed the following trend.

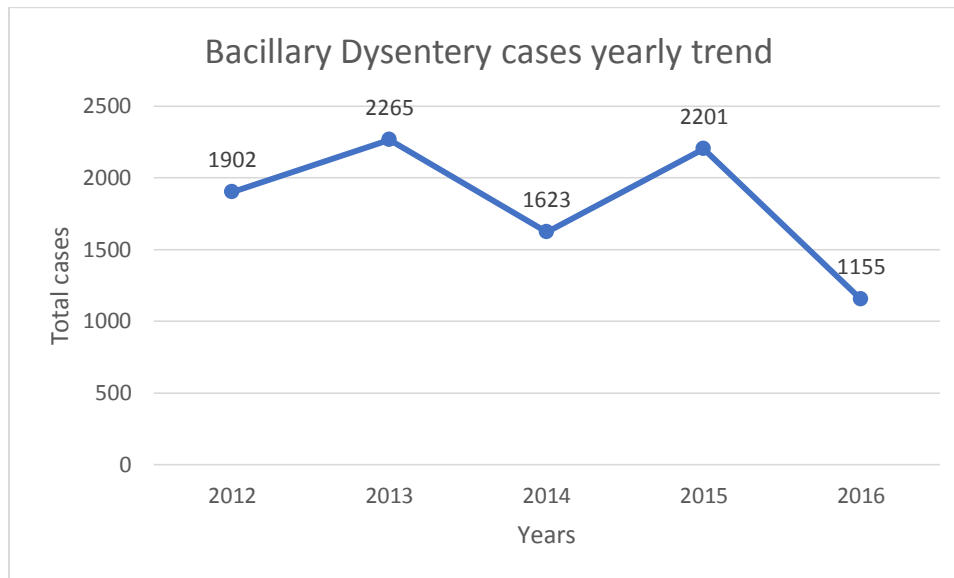


Figure 17. Trends of bacillary dysentery cases in Addis Ketema sub city for the past five years (2012-2016), Addis Ababa, Ethiopia.

In this surveillance data analysis, only three years data or data from 2013-2015 were selected. The reason behind were data incompleteness and inconsistency both at sub city PHEM department level and as well to the regional PHEM office. Trends of dysentery cases for the selected three years period in the sub city seems like as follow.

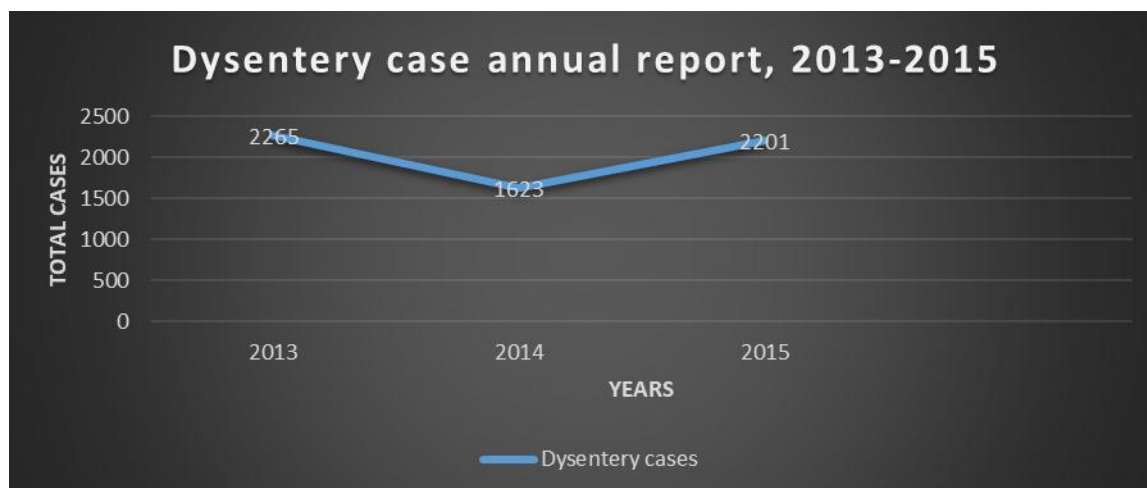


Figure 18. Annual dysentery cases specific report of Addis Ketema sub city by the year 2014-2016, Addis Ababa, Ethiopia.

Data source: Addis Ababa Regional Health Bureau.

The above graph describes the total dysentery cases which were seen by governmental health facilities of Addis Ketema sub city in the year 2013 to 2015. Based on AAHB PHEM office document that was tried to assess, the highest dysentery cases were seen by the year 2013, which was equal to 37% of the total cases that has been seen in the three years period and the lowest cases by the year 2014 and has 26% portion.

In the previous scenario we are going to see the analysis on yearly bases. That could give a general picture for those cases in that specific period. In order to make the analysis a little bit more descriptive, we tried to see the cases on monthly bases for each year, starting from year 2013.

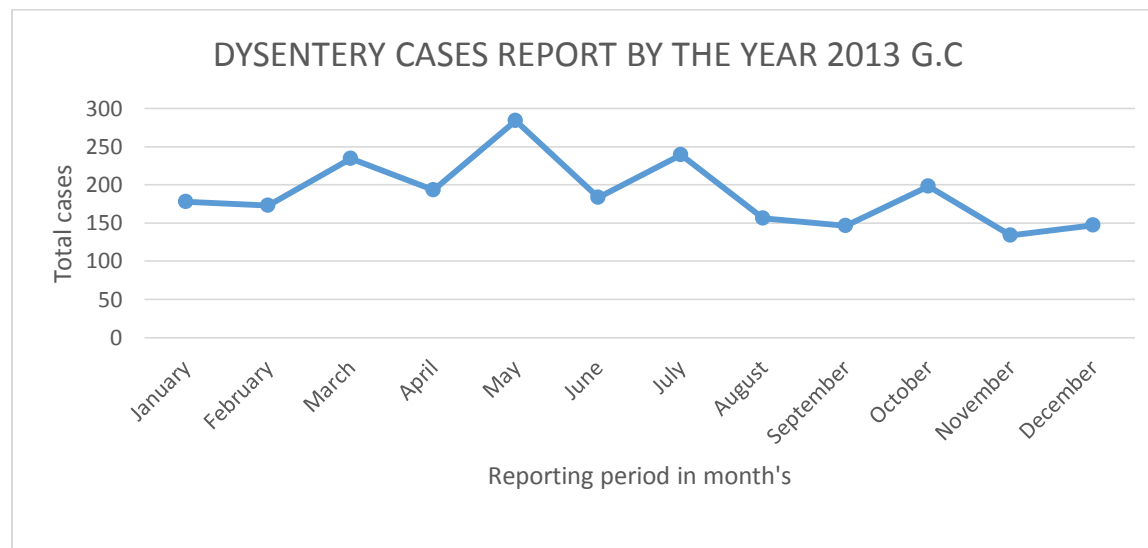


Figure 19. A monthly base dysentery case annual report of Addis Ketema sub city in 2013, Addis Ababa, Ethiopia.

Data source: Addis Ababa Regional Health Bureau.

In the above line graph, it is tried to illustrate the trend of dysentery cases in each month for the year 2013 G.C. In that fiscal year total of 2265 dysentery patients treated in all health facilities that are found in Addis Ketema sub city. The highest number of cases seen in the month May, 2013 G.C. It was 12.5% of the total cases and equal to 284 in number. The least cases were seen in the month of November, 134 cases in figure and 5.9% of the total cases.

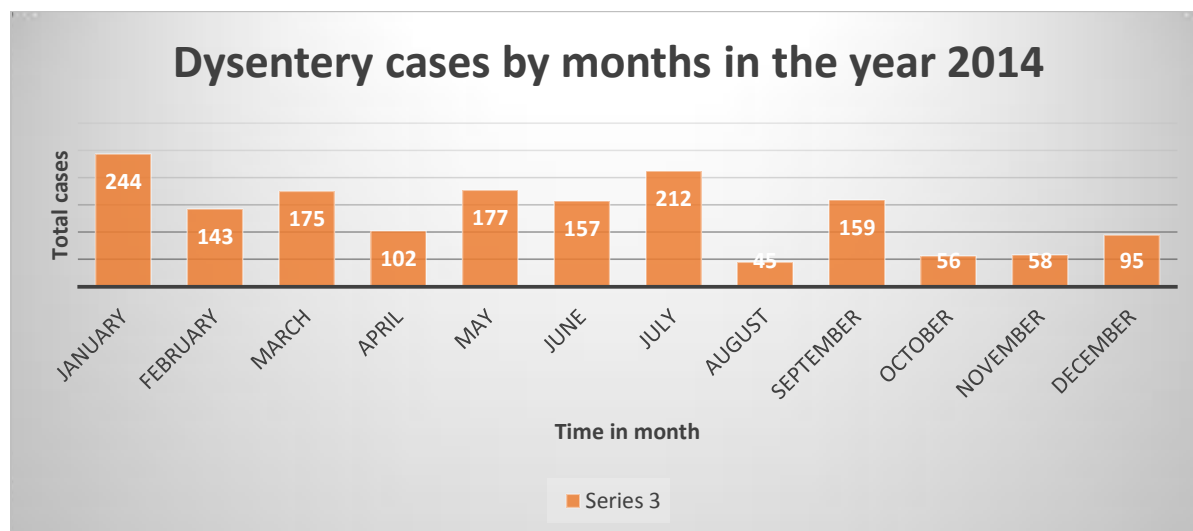


Figure 20. A monthly base dysentery case annual report of Addis Ketema sub city in 2014, Addis Ababa, Ethiopia.

Data source: Addis Ababa Regional Health Bureau.

The bar chart in the above described dysentery cases monthly base trend for the year 2014 G.C. This fiscal year was unique in that the lowest cases of dysentery seen throughout the year as compared to the rest two years that means year 2013 and 2015. In this year total of 1623 patients treated as dysentery. From those treated patients 15.03%, that is equal to 244 were seen in the month January, 2014 G.C. It was the highest. The month August for the year 2014 was the least cases of patients were seen and it was only 45 cases (2.8%).

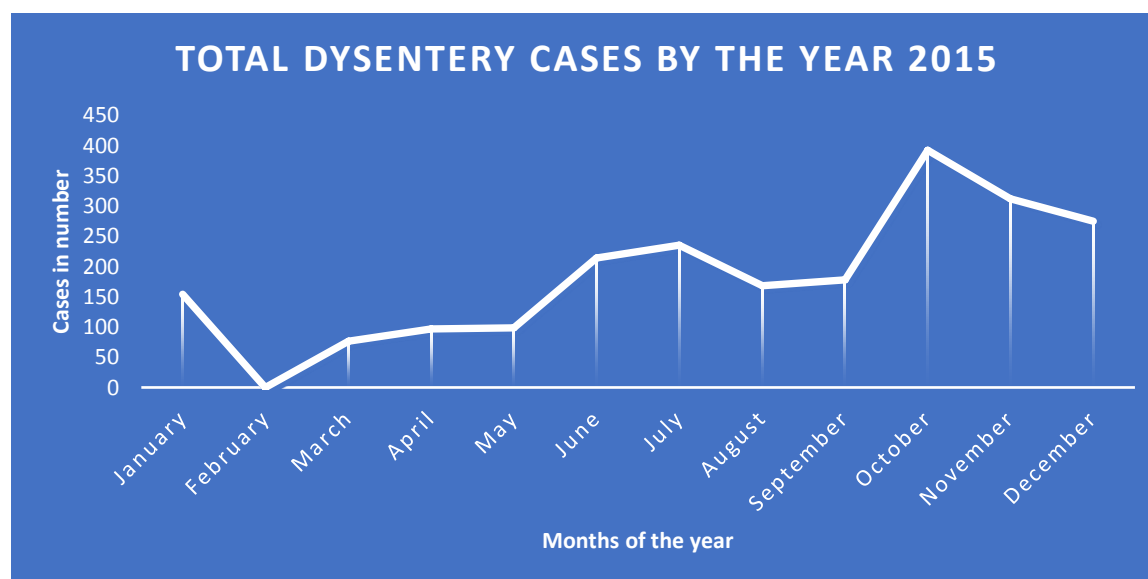


Figure 21. A monthly base dysentery case annual report of Addis Ketema sub city in 2015, Addis Ababa, Ethiopia.

Data source: Addis Ababa Regional Health Bureau.

The above graph also depicts the trend of dysentery report for the year 2015 according to the monthly order. It indicates the highest report for the year 2015 in October and its magnitude around 392. The lowest dysentery reported months were February and March. On February no reported case, whereas on the month of March it is around 77 cases were reported.

Table 9. Bacillary dysentery case summarized report of Addis Ketema sub city on monthly base from 2013- 2015, Addis Ababa, Ethiopia.

Sub city (Place)	Months of the year	No of cases		
		2013	2014	2015
Addis Ketema	January	178	244	154
Addis Ketema	February	173	143	-
Addis Ketema	March	234	175	77
Addis Ketema	April	193	102	97
Addis Ketema	May	284	177	99
Addis Ketema	June	183	157	214
Addis Ketema	July	239	212	235
Addis Ketema	August	156	45	168
Addis Ketema	September	146	159	178
Addis Ketema	October	198	56	392
Addis Ketema	November	134	58	312
Addis Ketema	December	147	95	275
Total		2265	1623	2201

In the above table, we described a summary report of bacillary dysentery cases for the past three consecutive years; 2013, 2014 and 2015. As we clearly understand from the table year 2013 were the period where maximum number of cases seen that means a total of 2265 (or 37%) cases in comparison with the rest two years. On contrary year 2014 were the period where minimum cases seen which was equivalent to 1623 (or 26%) cases.

Figure 22, below also presented as pictorial illustration in support of the above table and to create better understand about the distribution of dysentery cases on monthly bases for the years; 2013, 2014 & 2015.

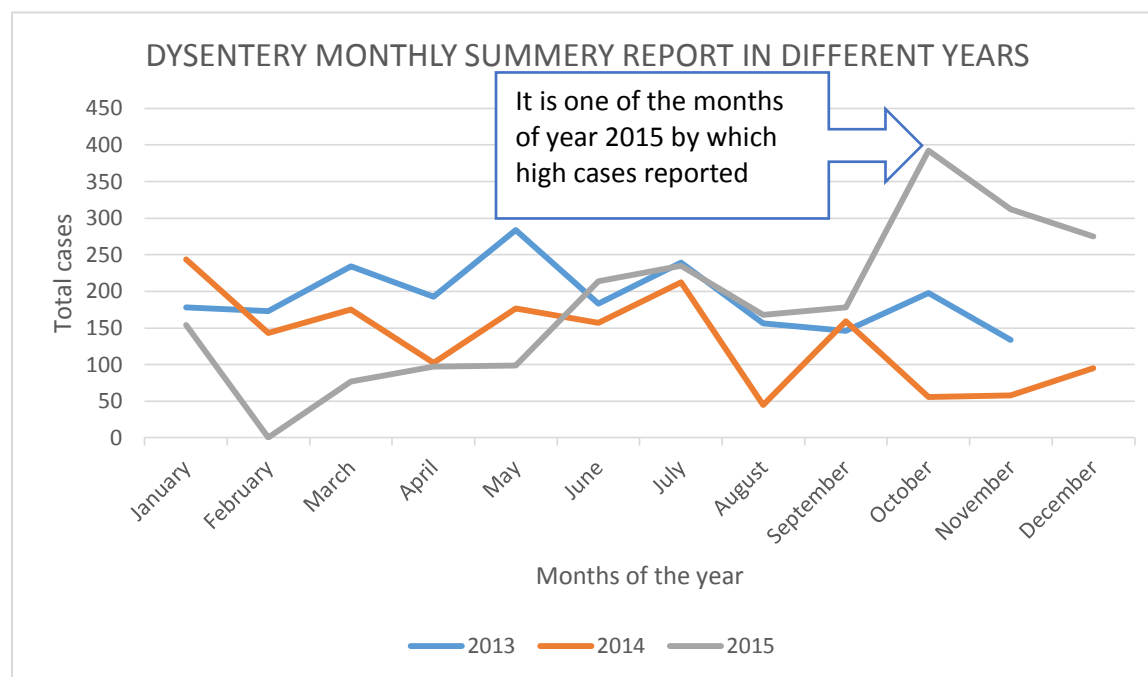


Figure 22. Bacillary cases summary report per month for the year 2013 to 2015.

This is a line graph provided as pictorial presentation for the above tabular illustration. It represents dysentery cases for the year 2013 to 2015 based on monthly variation. Month October of 2015 was the month by which high dysentery cases reported as compared to the rest months.

Table 10. Dysentery case proportion, death and CFR for the year 2013 to 2015, Addis Ketema sub city, Addis Ababa.

Year	Population	Cases	Proportion/1000	Death	CFR
2013	283,089	2265	8	0	0
2015	290,348	1623	5.6	0	0
2016	297,793	2201	7.4	0	0

Discussion

Bacillary dysentery is one of the major public health problems in developing countries like Ethiopia where sanitation is poor and communities live under condition of crowding. It could occur as epidemic and may put in danger the community's life unless strengthen the country's disease surveillance system and taking immediately actions as much as possible. Health authorities should be notified if the cases passed alert threshold; that means there is an unusual and sudden rise in the number of new cases or death due to bloody diarrhea reported weekly and there is an increase in the proportion of bloody diarrhea among diarrheal cases.

However, foodborne diseases including shigellosis should not be documented and reported as epidemics in Addis Ketema sub city when analyzing the surveillance data. The three years' surveillance data analysis; from year 2013 to 2015 G.C in Addis Ketema sub city showed a total of 6089 dysentery cases with proportion of total cases/1000 equivalent to 8, 5.6 and 7.4 respectively in each period.

Even though efforts have been made to improve the countries health program, the proportion of bacillary dysentery cases was not as such decreased as compared to shigellosis surveillance cases reported on 2006 to 2008 E.C by Addis Ababa Regional Health Bureau, it was 204 cases per 100 000 populations.

In our country, researchers have been conducted a study regarding the occurrence of bacillary dysentery outbreak at different times and in different places. The study which was made by Fesehaye Alemseged at Jimma university indicated that there was an outbreak in Jimma city in the month December 2008 E.C, prevalence was 64.5 and there was another study that was done in AAU Technology faculty on shigellosis outbreak from March to April 2010 by four

researchers namely Mer'awi Aragaw, Tilahun Tafese, Zayed Beyene and Adamu Addissie. The study showed that its prevalence was 40 and attack rate 6.8

When comparing those studies result with the current surveillance data analysis in Addis Ketema sub city, in which the proportion of total cases were 8,5.6 and 7.4 per 1000 population in year 2013, 2014 and 2015 respectively and the case fatality rate were zero, indicates that there are dramatic changes in the proportions of total cases. We could raise Some points as reasons for these differences. A first reason may be the countries health policy program that give emphases on disease prevention aspect. The other may be community's awareness regarding the disease and access of health facility in their district. On the other side the health facilities poor recording and reporting system, health professional missing the cases and laboratory error may come up as a reason for the dramatic changes since Addis ketema sub city is the place where that is characterized by many slum area, overcrowded, low socioeconomic status, shortage of latrine, poor sewerage system that contributed to not the decreased, rather for the increase.

The current surveillance data analysis in this sub city also showed that the highest cases of dysentery were seen in the months of October and November in year 2015, whereas the lowest cases were reported with those same months in the year 2014 in addition to the month of August. When it compared to other study in Burundi, epidemic peaks of bacillary dysentery have occurred in between September and March every year for the last 14 years. Civil unrest in the country during the time being resulted in the displacement of large numbers of people into refugee settlements with inadequate conditions of sanitation hygiene, further aggravating the situation and they conclude poor hygiene and unsanitary conditions leading to the increase in the number of cases.

On the contrary, the surveillance data analysis done on in Addis Ketema sub city indicated that there was an increase and at the same time a decrease cases of dysentery in similar months' but different years. That means highest cases were reported in the months of October and November for the year 2015 and lowest cases also reported on those similar months' in addition to August for the year 2014. Most possible reasons should be assessed behind hygiene and sanitation insufficient, overcrowding, being slum area and low socio-economic status of the sub city for the peaks and at the same time the lowest cases observed in similar month's but in different years.

Finally, we can conclude a further investigation must be conducted in order to understand the reason behind.

Limitation of the Study

- ❖ A five year fully completed surveillance data could not avail from Addis Ketema sub city PHEM data base system. Only a three years' data could have obtained
- ❖ A five-year surveillance data that is obtained from AAHB also lack completeness and miss matched from the data that is obtained from the sub city e PHEM document.
- ❖ The format which is used to collect weekly reportable diseases data from the health facility lacks the significant socio demographic variables like age and sex which are important in the descriptive analysis.

Conclusion

From the three years' surveillance data analysis which is conducted in Addis Ketema sub city, it is possible to take out the following as a conclusion.

- ❖ There is an improved health facilities access and health service program throughout the country but not as such observed those things in the burden of weekly reportable diseases like bacillary dysentery cases.
- ❖ Addis ketema sub city geographic area which is characterized by many slum area, overcrowded, low socio-economic status, shortage of latrine and poor sewerage system by itself is contributing factors for the increase in disease burden.
- ❖ Addis Ketema sub city PHEM office is not well equipped with surveillance data documents.

- ❖ There is a greater discrepancy between AAHB surveillance data and the sub city PHEM surveillance data.
- ❖ In general, the country's weekly disease reportable format lacks the important socio demographic data like age and sex.

Recommendations

- ❖ As clearly observed the surveillance data study the annual figure of dysentery cases 2265, 1623 and 2201 in the year 2013, 2014 and 2015 G.C respectively. It doesn't show a big difference in each year. The reason behind should be assessed by the sub city authoritative body.
- ❖ Those contributing factors for the incidence of dysentery cases in the sub city like being slum area, overcrowding, low socio-economic status, shortage of latrine and poor sewerage system should improve. This would be the responsibility of the Addis Ababa city administrative.
- ❖ The sub city PHEM office documented only a three years' surveillance data and it is also incomplete and has discrepancy with the regional health bureau data. This would be changed. The sub city PHEM should accommodate at least a minimum of five years' data and avoid any discrepancy between those data. This support should have made by the AAHB PHEM office.
- ❖ The socio demographic variables that are not included in weekly reportable format should be taken in to consideration. This would be the responsibility of AAHB.

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Chapter-III Evaluation of Surveillance System

3.1 Surveillance System Evaluation of Acute Flaccid Paralysis (AFP) and Acute Malnutrition in Addis Ketema sub city, Addis Ababa-2017.

Abstract

Background: Surveillance is a core function of public health practice. It is carried out from the central health authorities down to the peripheral health facilities and community level. Conducting evaluation study for the surveillance system promotes the best use of data collection resources and assures that systems operate effectively. And also allows us to define whether a system is useful for a particular public health initiative and is achieving the goals of the public health program and the data collection objectives. On the bases of this assumption, we do our surveillance data evaluation for two reportable diseases, Acute Flaccid Paralysis and Acute Malnutrition.

Objective: The aim of this study would be to evaluate efficiency and effectiveness of surveillance current practice and as well performance of the core function of the public health surveillance system in different health facilities of Addis Ketema Sub City.

Methods and materials: A descriptive secondary data review was applied from June 19 to July 31, 2017 G.C. For evaluating the surveillance system, the recommended updated outline of CDC guidelines for evaluating surveillance systems was gone to be used. The data was collected through semi structured questionnaires, interviewing and certain observations. Microsoft Excel was used for the data analysis.

Result: The PHEM office of Addis Ketema sub city has included a total of 312,121 residents of the sub city under surveillance of the country 21 priority diseases for the year 2017. This evaluation study indicated that 100% of the health offices and 90% of the health centers have a guide line for their surveillance at their sites, it was evaluated that more than 90% of the health offices have prepared their own rumor log books and only 36% do have registered rumor on their books. The assessment also suggested that there was no as such any shortage of the recommended reporting formats in the past 6 months, With the exception of one health center, all the visited health facilities assigned surveillance focal a trained surveillance professional. The respondents from all assessed health facilities informed that there was no as such any suspected outbreak case of AFP and Acute malnutrition in the past 6 months, it was assessed that only 30% of the health offices provide feedbacks both in oral and written form on monthly bases to the next level and only 40% of the governmental health centers surveillance focal have a recent surveillance training. According to the evaluation study it was recognized that only 36% of the facility do its supervision or active search on weekly or biweekly base and 18% of them do this same thing on a

monthly base and also indicated that 85% of the respondent implies that the system allows all level professionals to fill the format correctly and observed that the report timeliness lies in between 82% and 90% in addition to 100% completeness rate.

Introduction

Background

Surveillance, a core function of public health practice, is defined as “the ongoing, systematic collection, analysis, and interpretation of health data essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of [this information] to those who need to know” and act upon that information (1)

A well-functioning disease surveillance system is critical to measures the burden of a disease (health-related event), identification of populations at high risk and the identification of new or emerging health concerns to the health system, in providing evidence-based information for planning, implementation, monitoring trends in the burden of a disease and evaluation of public health intervention programs to prevent and control disease, injury, or adverse exposure, evaluate program performance, prioritize the allocation of health resources, describe the clinical course of disease; and stimulate for epidemiologic research (2)

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 and also put it in diagram for clear illustration in figure 1. Below.

In most developing countries, surveillance systems of communicable diseases are often weak which is neither reported nor analyzed on time. Though the burden of communicable disease remains major public health concern. (2)

Effective Communicable diseases control relies on effective surveillance and response system that promote better coordination and integration of surveillance function. Recognizing this, the initiative to strengthen the disease surveillance system that promotes the integration of surveillance activities in Ethiopia was started in 1996. Later in 1998 the World Health Organization Regional Office for Africa (WHO/AFRO), following the resolution of the 48th

assembly, started promoting Integrated Disease Surveillance and Response (IDSR) for all member state to adopt as the main strategy to strengthen national disease surveillance system. (3)

Ethiopia as a member state adopted this strategy, which is district centered and outcome oriented. And based on the steps recommended by the strategy, the Federal Minister of Health (FMOH) of Ethiopia and its development partners did an assessment of the country's surveillance system in October 1999. (3, 4)

Ethiopia has been implementing the IDSR strategy for strengthening communicable diseases surveillance in the country since the year 2000. More recently, IDSR has been incorporated as one pillar in the Public Health Emergency Management (PHEM) system under the foresight of the Ethiopian Public Health Institute (EPHI), a specialized agency of the Federal Ministry of Health (FMOH) and also grouping the country's current selected priority diseases and events in to the following four categories. (Integrated Disease Surveillance and Response –2010 Technical guidelines)

- ❖ Epidemic prone diseases (Acute hemorrhagic fever syndrome, Anthrax, Cholera, Shigella, Measles, Meningococcal Meningitis, yellow fever, Typhoid fever...)
- ❖ Diseases targeted for eradication /elimination (AFP, Neonatal tetanus, Dracunculiasis, and leprosy...)
- ❖ Other Major Diseases, events or conditions of public health importance (Adverse events following immunization(AEFI), Diabetes mellitus, Injuries (road traffic accidents), HIV/AIDS (new cases), Malaria, Malnutrition, Maternal deaths, Mental health (Epilepsy)...) and
- ❖ Diseases or events of international concern (Human influenza due to a new sub type, SARS, Small pox and Any public health event of international or national concern)

The PHEM oversight cascades down to regional level through regional health bureaus, with their zonal health departments and district health offices. Through this system, 21 priority diseases and events have been identified for weekly and immediately reporting from the level of health post upwards. (4)

Acute Flaccid Paralysis (AFP) and Acute Malnutrition are parts of those diseases and health problems in Ethiopia, which have weekly and immediately reportable basis. And also, these diseases have public health importance in the sub city surveillance system.

Acute Malnutrition one form malnutrition and is classified into severe acute malnutrition (SAM) and moderate acute malnutrition (MAM) based on the degree of wasting and the presence of edema. Severe Acute Malnutrition (SAM) is currently responsible for unacceptable mortality rate in many health facilities throughout the country, which is over 20%. (6)

Acute Flaccid Paralysis (AFP) also a disease that is targeted to eradicate from Ethiopia. (4, 5)

Thus, conducting a surveillance system evaluation on these two reportable diseases promotes the best use of data collection resources and assures that systems operate effectively. And also allows us to define whether a system is useful for a particular public health initiative and is achieving the goals of the public health program and the data collection objectives.

The routine flow of surveillance data is usually from the reporting sites to the next level up to the central as indicated in the figure below. The community and health facilities especially health posts are the main source of information. The information collected from the site is compiled in standard form with simple analysis and then forwarded to the Woreda health office. Woreda level uses standard formats to compile aggregate and send the data to zone/region, from which the central level receives. Feedback and information sharing follow the same route if any. (5)

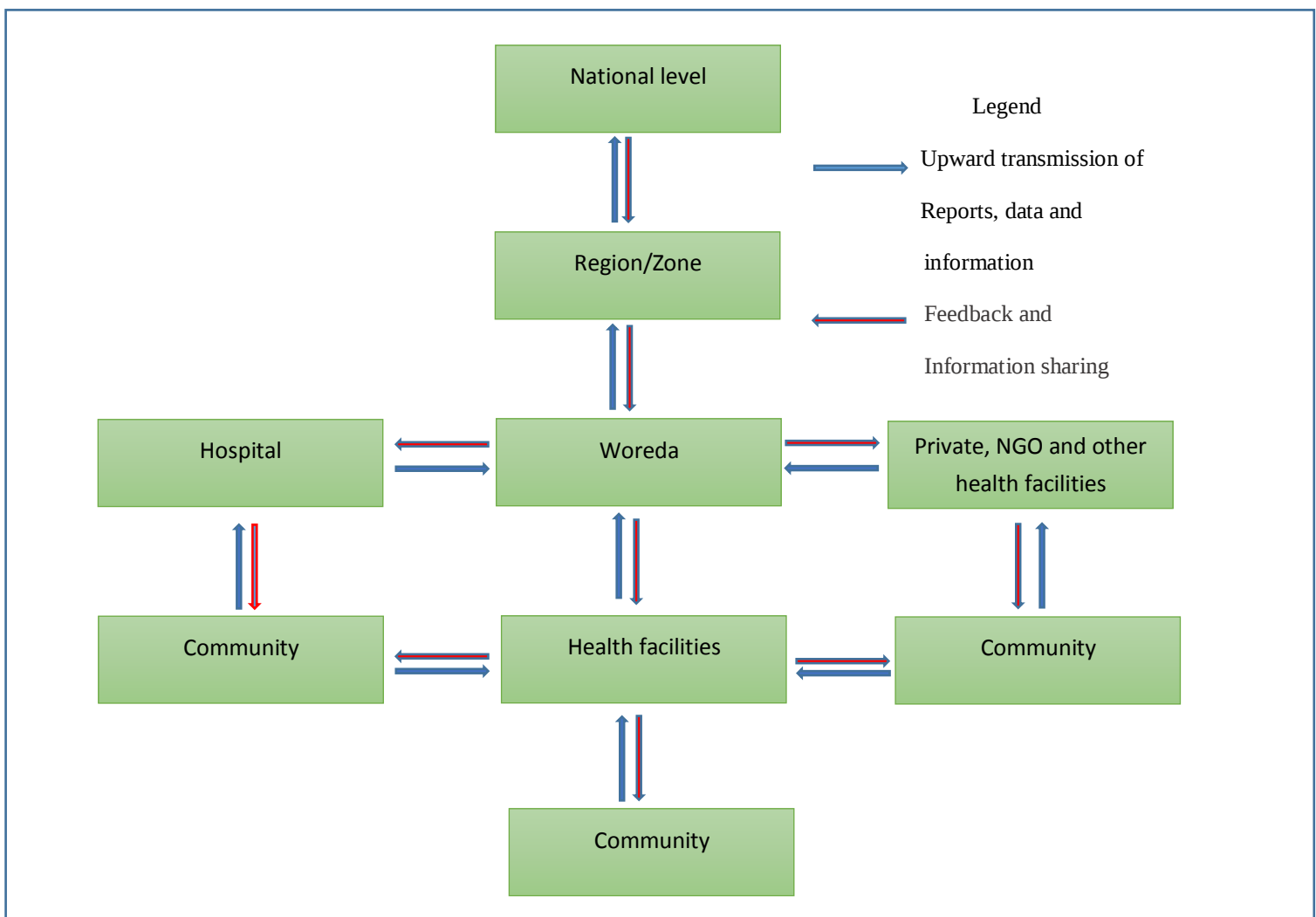


Figure 23. Diagram illustrating the formal and informal flow of surveillance data throughout a health system. (Source: National PHEM Guideline, Ethiopia, 2012)

Rationale of the Evaluation

In Addis Ketema Sub City there was no any document that indicated use of the surveillance data at the local level as evidence for public health decision making. In addition to this, Surveillance system evaluation for AFP and Acute Malnutrition was not done in the area before and no more was known about the effectiveness and efficiency of the system. Therefore, with this surveillance evaluation, in addition to assessing the systems attributes, the attention given for reportable diseases on the sides of timely reporting, data recording and compiling and taking action according to the data that was assessed.

Objectives

General Objective

- ❖ To evaluate the efficiency and effectiveness of the current practice including attributes of surveillance system of AFP and Acute Malnutrition cases in Addis Ketema sub city of Addis Ababa.

Specific Objectives

- ❖ To evaluate the core activities of the surveillance system such as case detection, reporting, analysis and response in the sub city.
- ❖ To evaluate the attributes of the surveillance system of the selected diseases in the sub city.
- ❖ To identify the strength and weakness of the surveillance system.

Methods and Materials

Study Area

This Surveillance system evaluation has been conducted in Addis ketema sub city which is one of the ten sub cities of Addis Ababa City Administration. It situated in the center of Addis Ababa, bounded by Lideta sub city in the South-East, Kolfefe Keranio in the West and Arada and Gulele in the North East direction. According to the 2007 population and housing census report Addis Ketema sub city cover an area of 9.98 Sq. Km (863.84 hectares).

The sub city has ten woredas' with a total area of 863.85558 hectare as of mini EDHS 2014. According to the data from census of Central Statistical Agency (CSA) the population of the sub city in 2017 estimated to be 312, 121 which constitute 63,904 and 62,889 males and females respectively.

Regarding health facilities distribution with in the sub city, there are 2 private hospitals, 10 functional governmental health centers, and with 68 private health facilities including medium, small clinic and drug stores.

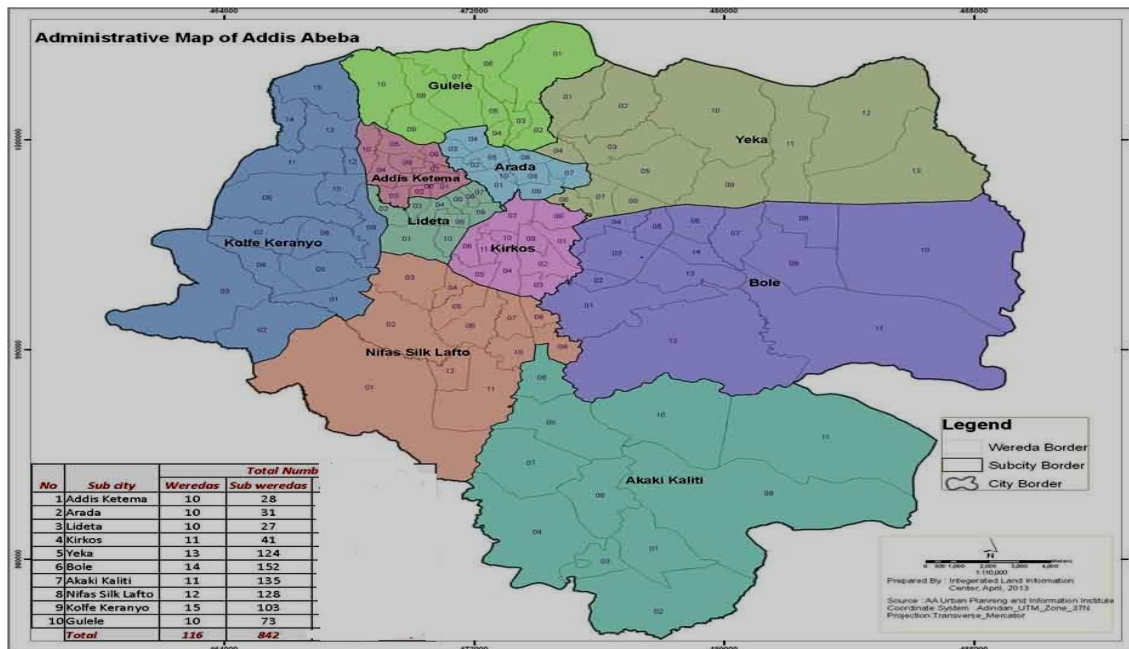


Figure 24. Map of Addis Ababa and its sub cities.

Source: Addis Ababa Ethiopia, ATLAS 2016

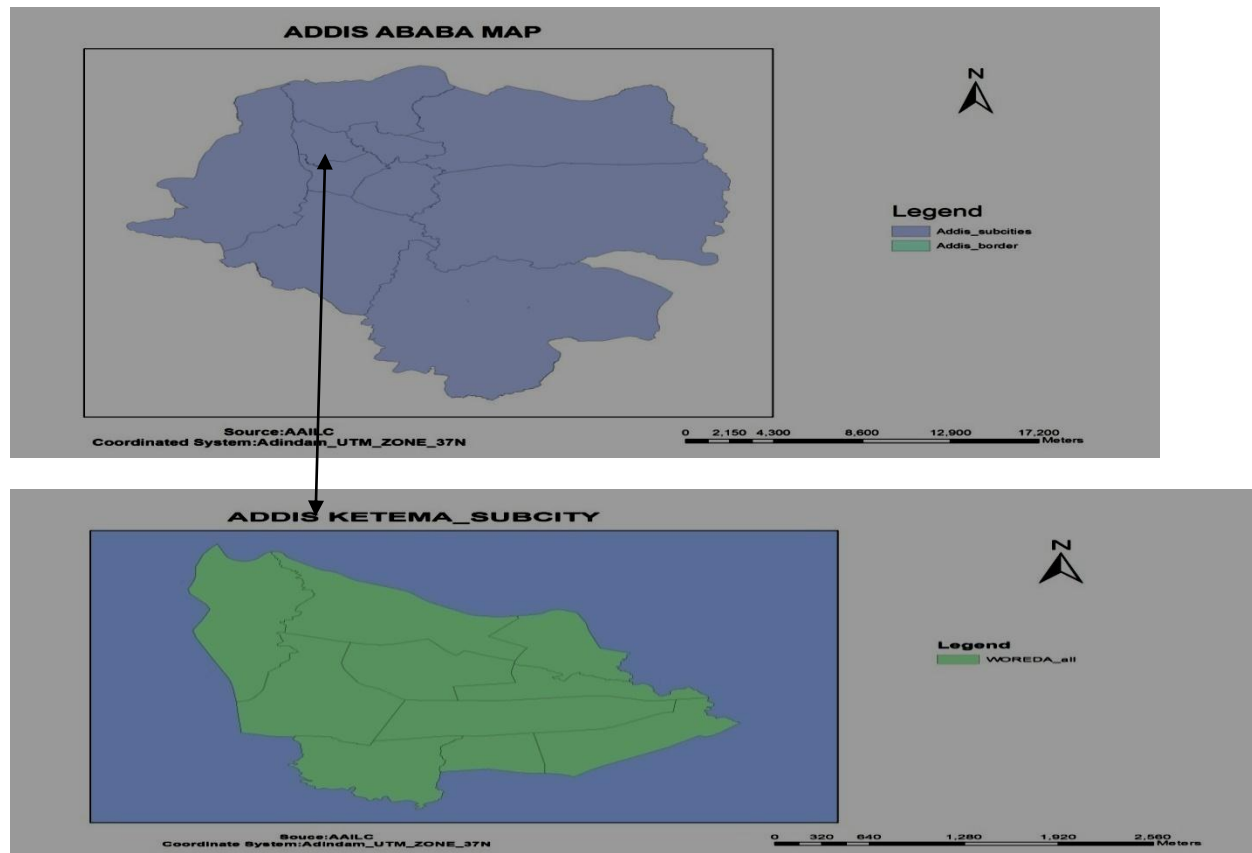


Figure 25. Administrative Map of Addis Ketema sub city.

Study Period

The field work was being carried out from June 19 -July 31, 2017 G.C

Study Design

A descriptive secondary data review was used. And also, the study was conducted by following the recommended updated outline of CDC guidelines for evaluating surveillance systems.

Study Subject and Size

The study subjects were all governmental health institutions that found in the sub city. A total of 21 study units have been included in this evaluation study, namely 10 governmental health centers' and their respective woreda level health offices and 01 sub city health office.

Data Collection Methods

The data was collected through semi-structured questionnaires, qualitative interview, observation of tools for surveillance and secondary data review and the necessary interviews were being conducted with the assign PHEM officers and surveillance focal persons in those visited health institutions.

During session of each visit, it was being briefed the PHEM officers and surveillance focal persons the purpose of the assessment which has to evaluated the performance of the system and not merely the individual 's performances.

Data Analysis

The data analysis was carried out by using Microsoft Office Excel.

Standard Case Definitions

Acute Flaccid Paralysis (AFP)

Suspected: Any child under 15 years of age with AFP or any person with paralytic illness at any age in whom the clinician suspects poliomyelitis.

Confirmed: A suspected case with wild poliovirus isolation in stool.

Sever Acute Malnutrition

Suspected: Children age from 6 months to 5 years with MUAC less than 11 cm and/or children with bilateral edema regardless of their MUAC.

Confirmed: Children with MUAC less than 11 cm and/or children with bilateral edema regardless of their MUAC.

Operational Case Definitions

Terms used in the evaluation were operationally mentioned as follows: -

Case detection: is the process of identifying cases and outbreaks.

Case registration: is the process of recording the identified cases

Case/outbreak Confirmation: refers to the epidemiological and laboratory capacity for confirmation.

Reporting: Refers to the process by which surveillance data moves through the surveillance system from the point of generation.

Epidemic preparedness: Refers to the existing level of preparedness for potential epidemics

Stakeholders: The organizations or individuals that generate or use surveillance data for promotion of health, prevention and control of diseases.

Usefulness: Usefulness of the surveillance system is reflected by documented changes in policies and procedures as a result of information generated by the system.

Simplicity: Simplicity denotes the structure and ease of operation of the surveillance system.

Flexibility: Flexibility of a surveillance system is its capacity to adapt to changing information needs or operating systems within minimal additional time, personnel and funding.

Quality: The quality of data reflects the completeness and validity of the data recorded in the Zonal or Regional Health Department.

Acceptability: Acceptability is the willingness of persons, institutions or organizations to participate in the surveillance system

Sensitivity: Sensitivity refers to the ability of the system to detect cases or outbreaks through trends in the surveillance data

Positive predictive value: Positive predictive value refers to cases that actually have the health condition in question

Representativeness: Representativeness refers to the extent to which the surveillance system accurately describes the occurrence of medical condition over time and their distribution in the population by place and person

Stability: Stability was assessed by questioning the surveillance officers on the consistency of the system.

Dissemination of the Evaluation Result

The evaluation results would have been disseminated to AAU SPH, Addis Ketema Sub city health office and for those visited woreda health offices & respective health centers in hard and soft copy.

Ethical Clearance

In the surveillance data evaluation study since there is no any direct contact with patients or community, no need of obtaining a written consent for the ethical clearance. Rather the necessary approval letters

written from the sub city health office was a requirement in order to visited those health institutions which was being evaluated.

Result

Discussion with the Concerned Authoritative Body

The principal investigators, those who assigned Addis Ketema sub city cohort VIII field epidemiology residence conducted a brief discussion with responsible persons (head of sub city disease prevention & health promotion core process owner and PHEM focal person) before being engaged through the sub city's surveillance data evaluation process. This discussion was an important first step for determining the priority diseases/events and addressed them through this system evaluation.

The briefing also enabled us to be well informed about those notifiable diseases with gaps to their surveillance systems and understand as such no any previous study was conducted on this regard. Thus, one of the immediately reportable diseases, AFP cases & Acute malnutrition cases that is a weekly reportable disease were selected being evaluated on the study.

Public Health Importance of Surveillance System

The Public Health Emergency Management (PHEM) is one of eight core processes selected by the Ministry during BPR –based restructuring process in 2009. It is defined as the process of anticipating, preventing, preparing for, responding to and recovering from the impact of epidemics and health consequences of natural and manmade disasters. This core process is comprised of four sub-processes which are: Public Health Emergency Preparedness, Early Warning, Response and Recovery.

The Integrated Disease Surveillance(IDS), one component of the PHEM's sub processes that means a part of early warning system refers to the various surveillance activities become integrated into one system within the broader national health system. It also emphasizes all functions of surveillance activities to be carried out using similar structures, processes and personnel.

A functional disease surveillance system is essential for defining problems and taking action. Proper understanding and use of this essential epidemiological tool (public health surveillance) helps health workers at the woreda and health units to set priorities, plan interventions, mobilize and allocate resources, detect epidemics early, initiate prompt response to epidemics, and evaluate and monitor health interventions. It also helps to assess long term disease trends.

Currently, in Ethiopia 21 diseases and events are selected to be included into the routine surveillance, based on the priority that has been set with the interest at national and international levels. These diseases and events are listed in the following table by classifying as immediately and weekly reportable (13 are immediately reportable whereas 8 are weekly reportable).

Table 11. List of Reportable Disease/Conditions in Addis Ketema sub city, Addis Ababa, 2017.

Immediately Reportable Diseases	Weekly Reportable Diseases
1. Acute Flaccid Paralysis (AFP) / Polio 2. Anthrax 3. Avian Human Influenza 4. Cholera 5. Dracunculiasis / Guinea worm 6. Measles 7. NNT 8. Pandemic Influenza A 9. Rabies 10. Smallpox 11. SARS 12. VHF 13. Yellow fever	14. Dysentery 15. Malaria 16. Meningococcal Meningitis 17. Relapsing fever 18. Severe Malnutrition 19. Typhoid fever 20. Typhus 21. Maternal death

Description of Acute Malnutrition and AFP cases surveillance system

Acute Malnutrition

Malnutrition is the common cause of illness and death among under-five children in Ethiopia. According to the 2014 Ethiopian Mini Demographic and Health Survey (EMDHC) report; 42%, 26.7% and 9% of under-five children were stunted, underweight and wasted respectively.

Acute Malnutrition one form malnutrition and is classified into severe acute malnutrition (SAM) and moderate acute malnutrition (MAM) based on the degree of wasting and the presence of oedema.

Severe Acute Malnutrition (SAM) is defined as a weight for-height measurement of 70% or less below the median, or three SD or more below the mean National Centre for Health Statistics reference values, the presence of bilateral pitting edema of nutritional origin, or a mid-upper-arm circumference of less than 110 mm in children age 1-5 years.

Acute Malnutrition is defined as moderate acute malnutrition if the wasting is less severe that means a weight - for- height measurement of under – five children lies between 70% and 80% of the median National Center for Health Statistics (NCHS median) reference values; without any edema, or a mid-upper-arm circumference lies between 110 mm and 125 mm in children age 1-5 years.

Under Addis Ketema sub city, there have been 10 governmental health facilities which give a nutritional support services for acute malnutrition case children of less than five years of age and the weekly PHEM report of the sub city indicated that a total 40 acute malnutrition cases were reported in WHO week of 01 to12 of the year 2016/17.

The fig. below will give a brief illustration regarding the sub city acute malnutrition cases by classifying them as SAM and MAM cases.

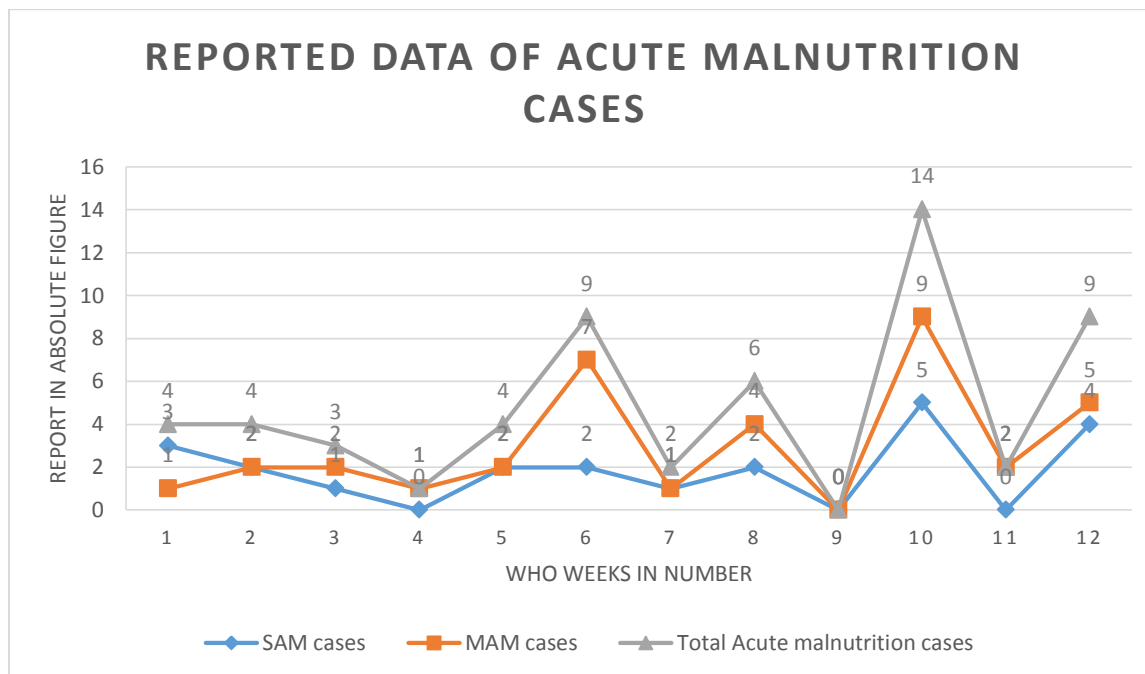


Figure 26. Trend of acute malnutrition cases by WHO weeks in Addis Ketema sub city for the year 2017.

According to the reported data high malnutrition cases were showed in WHO week of 10 that is 14 in absolute figure and low case that mean a zero report in week 9.

Acute Flaccid Paralysis (AFP)

Poliomyelitis (polio) is one of the highly infectious viral disease which mainly affects young children. The virus is transmitted by person-to- person spread mainly through the fecal-oral route or, less frequently, by a common vehicle (e.g. contaminated water or food) and multiplies in the intestine, from where it can invade the nervous system and can cause paralysis.

Poliomyelitis is targeted for eradication. To achieve this ultimate objective of polio eradication, the World Health Organization recommends that countries conduct highly sensitive surveillance for cases of acute flaccid paralysis (AFP).

Acute flaccid paralysis (AFP) is defined as a sudden onset of paralysis/weakness in any part of the body of a child less than 15 year of age. This syndromic reporting strategy, of investigating all AFP cases rather than just “suspected poliomyelitis”, serves many purposes.

First, AFP surveillance substantially increases the sensitivity of the surveillance system and allows it to detect paralytic poliomyelitis due to wild poliovirus transmission in the population.

Secondly, AFP surveillance provides objective data with which to monitor the quality of surveillance in an individual country or large population group. AFP Surveillance also helps to monitor progress in polio eradication when polio exists in a country as well as helps to define when polio is gone from the country or area.

The Ethiopian Public Health Institute (EPHI), a specialized agency of the Federal Ministry of Health (FMOH) recommended that Addis Ketema sub city as one reporting entity should have expected to report a minimum of 2 AFP suspected cases yearly, but the sub city has been reported only 01 AFP suspected case for the previous year, 2015/16 and remain silent in the current year, 2016/17.

Population Under Surveillance and Responsible Health Facilities

The National Public Health Emergency Management targets all the population in the country to be under surveillance for all the twenty-one priority diseases. The Addis Ababa City Administration cascade the same structure through its sub cities' health bureaus and with woreda health offices and health centers.

The PHEM office of Addis Ketema Sub City as a hierarchal structure of the National PHEM has to be included all residents of the sub city with a total number of 312,121 under surveillance of those priority diseases for the year 2017. (According to 2017-year population projected estimate of Central Statistical Agency census).

The following two tables gives you a better understanding for the distribution of governmental health centers which take over the main contribution in the sub city' current surveillance system with their respective woreda health offices and about the distribution of the governmental health centers and other health facilities through their respective woreda health offices.

Table 12. The responsible governmental health centers for public health care and population under surveillance in the visited woreda health offices of Addis Ketema sub city for the year 2017.

S. No	The assessed woreda health offices	Gov. Health Centers for public health care (The due responsible facility for the surveillance system)	Projected Total Population under surveillance for the year 2017		
			Male	Female	Total population
1.	Woreda 1	Ginbot 20 H.C	13,048	14,135	27,183
2.	Woreda 2	Abyssinia H.C	15,340	16,619	31,959
3.	Woreda 3	Woreda 3 H.C	16,482	17,856	34,338
4.	Woreda 4	Addis Ketema H.C	19,200	20,801	40,001
5.	Woreda 5	Abebe Bikila H.C	15,030	16,282	31,312
6.	Woreda 6	Felege Meles H.C	14,068	15,241	29,309
7.	Woreda 7	Addis Ray H.C	16,931	18,341	35,272
8.	Woreda 8	Millennium H.C	17,013	18,431	35,444
9.	Woreda 9	Kuas Meda H.C	16,366	17,730	34,096
10.	Woreda 10	Woreda 10 H.C	9,708	10,516	20,224
Total			153,186	165,952	319,138

As a whole the sub city comprised of 2 private hospitals, 10 governmental health centers and around 64 private clinics that are labeled as higher, medium, primary, specialized and others for the total population health care services.

Table 13. Distribution of health facilities in 10 visited woreda of Addis Ketema sub city, Addis Ababa, June 2017.

S. No	List of health offices in Addis Ketema Sub City	Number of health facilities under the respective woreda health offices								Potential representation of the population under surveillance	Health Coverage
		Hospitals	Health Centers	Private Clinics				Others**	Total		
				Primary	Medium	Specialized Internal	Specialized*				
1	Woreda 1 HO	0	02	0	02	0	03	01	08	Urban	100%
2	Woreda 2 HO	0	01	0	01	0	0	0	02	Urban	
3	Woreda 3 HO	0	01	0	03	0	0	0	04	Urban	
4	Woreda 4 HO	01	01	0	02	0	01	01	06	Urban	
5	Woreda 5 HO	01	01	01	0	02	01	0	06	Urban	
6	Woreda 6 HO	0	01	02	0	0	01	01	05	Urban	
7	Woreda 7 HO	0	01	01	04	01	01	01	09	Urban	
8	Woreda 8 HO	0	01	05	06	02	06	0	20	Urban	
9	Woreda 9 HO	0	01	03	04	0	04	01	13	Urban	
10	Woreda 10 HO	0	01	0	02	0	01	01	05	Urban	

*Specialized private clinics refer to dental, ophthalmic, dermatology, MCH, dialysis and physiotherapy clinics.

**Others health facilities refer to medical laboratory, wogesha and Holley water

In all assessed health facilities, the respondents agree that the population under surveillance have unsatisfactory health seeking behavior especially for Acute malnutrition, though that the current health care coverage of the Sub City has been reached 100%.

Case Detection and Registration

On this investigation, a total of 21 health facilities of Addis Ketema Sub City were have been visited/observed and possibly done a thorough assessment on each visited site based on the check list that has been developed from WHO and CDC updated guidelines.

From this study, it was clearly understood that all the health facilities have standard case definitions for the 21 priorities diseases but being posted and do have an awareness creation for their staffs for only a certain standard disease case definition, such as AFP, AWD, NNT, measles. It was evaluated that no health facility has been posted case definition and awareness creation for case like acute malnutrition.

This evaluation also indicated that 100% of the health offices (11/11) and 90% of the health centers (9/10) have a national manual or guide line for their surveillance at their sites.

Case Confirmation

It was clearly observed that there is a well-integrated referral linkage among the sub city health facilities for appropriate specimen collection, handling and transportation like stool, sputum and blood for the routine activities of the surveillance system. This collection, handling and transportation of specimen mostly done for confirmation AFP and measles cases. Case confirmation in the surveillance process refers to the epidemiological and laboratory capacity for confirmation.

In Addis Ketema Sub City, the capacity of specimen collection, handling and transportation and as well case confirmation mainly lied on the governmental health centers and those of them have a Capacity to collect, handle and transport specimen to higher level laboratory. Availability of guide line for specimen collection, handling and transportation and assigning of fully employed focal person also seen by all of them.

Reporting

It was understanding that all the evaluated health facilities in Addis Ketema Sub City were have been sent surveillance report to the next higher level clearly and in completed manner. The assessment also suggested that there was no as such any shortage of the recommended reporting formats in the past 6 months throughout the investigated facilities.

Regarding the national reporting dead line time or reporting periodicity for the immediately and weekly diseases, all the assigned PHEM staffs in the sub city and woreda health offices and surveillance officers/focal in the health centers do have a knowledge that immediately reportable diseases should be notified to the next reporting level within 30 minutes and weekly reportable diseases should be reported the next level as; Health centers to woreda health offices every Monday till mid-day, Woreda health offices to sub city health offices every Tuesday till mid-day and Sub city health office to regional health bureau every Wednesday till mid-day.

Most health facilities in the sub city used telephone in addition to hard copy in order to send report to the next level where as the Sub city health office uses email for reporting to regional health bureau. In case of emergency situation, the use of personal mobile phone is common by all PHEM staffs and surveillance focal.

Data Analysis and Interpretation

With the exception of one health center, all the visited health facilities in Addis Ketema Sub City assigned their PHEM or surveillance focal a trained surveillance professional who have sufficient computers knowledge and skill in order to analysis and interpret the reported data. The reason for one of the health center not assigning a trained person is staff turnover and lack of trained professional with surveillance.

And also, all have an appropriate denominator data and use computer for the analysis even though a slight knowledge gap regarding denominator data among the assigned staff. The assigned staffs also evaluated about the knowledge for an action thresh hold of the country's priority diseases and each of them could described at least a minimum of two from those commonly focused, posted and make an awareness mostly, like AFP, Measles, NNT, AWD and Maternal Death. No one could possibly have described an action thresh hold level of acute malnutrition case.

In those assessed facilities, it is observed that there is only an experience of analyzing surveillance data of their top three priority diseases by time and place or performing their trend analysis once or two wise a year but there is no any established mechanism for notifying these to the next level.

Epidemic Preparedness and Response

All the evaluated woreda health offices and health centers including the sub city health office have been established their own Rapid Response Team (RRT) or Epidemics Management Committee which is coordinated by the sub city or woreda chief administrators.

With the exception of the sub city health office, all the observed facilities do not have written plan for their RRT activities. But the teams scheduled their meeting time biweekly or monthly base and take a minute on their record every meeting session.

None of the visited health facilities including the sub city health office encountered shortage of emergence stock drugs and other supplies in the past 1 year. There is no a specific budget line or an access of fund for epidemic response in all health offices and health centers. observe the table below for further discription of RRT in association with different variables.

Table 14. A description of RRT by different Variables in Addis Ketema sub city health offices and health centers, June 2017.

S. No	Variables for RRT description	Sub city health office (N=1)	Woreda health office (N=10)	Woreda health centers (N=10)	Total (N=21)
1.	Written emergency preparedness plan for an outbreak	1	0	0	1
2.	Availability of emergency stocks of drugs and supplies	0	10	10	20
3.	Experienced shortage of drugs or vaccines during the recent epidemics	0	0	0	0
4.	Presence of budget line for epidemic response	0	0	0	0
5.	Observed epidemics management meeting minutes	1			
6.	Presence of RRT	1	10	10	21

Outbreak Investigation

The respondents from all assessed health facilities informed that there was no as such any suspected outbreak case of AFP and Acute malnutrition in the past 6 months with in the sub city and no any documented report or standard procedures for outbreak investigation available during the assessment.

However, it is known that there was a repeated outbreaks of relapsing fever cases were reported during the previous and current years respectively in 7 different woredas of the sub city and one of cohorts 8 EFETP resident was being participated in the investigation process.

Feedback

Providing regular, timely and relevant feedback is an essential element of the surveillance system. It reinforces the importance of participating in public health surveillance for health care providers and those who reported cases of notifiable diseases.

In Addis Ketema sub city, all the observed woreda level health offices have an experience of providing feedback to the health centers and private clinics on routine surveillance and overall activities of the services during the past 6 months. But there was a variation in the way and time of addressing their feedbacks.

According to the observation, it was assessed that only 3 (30%) of the health offices provide feedbacks both in oral and written form on monthly bases to the next level. The rest 7 (70%) of the health offices addressed their feedback only in oral message and in weekly manner.

Likewise, the sub city level health office informed that it has delivered its feedback reports for all respective woreda health offices and private facilities every week or two weeks depending on the priority that has been set early.

Training

With the exception of one or two health centers, all technical staffs working in PHEM department in sub city and woreda level health offices and also the assigned surveillance focal in health centers do have a basic training on surveillance system of the country priority diseases even though there is difference in time period that they got the training.

From the total assessed facilities, only 4 (40%) of the governmental health centers surveillance focal have a recent surveillance training, that means their training were within the recent one-year period. The rest, 6 (60%) surveillance focal training was not recent, 2 years back. But all surveillance staffs that are working in sub city and woreda health offices PHEM department do have a recent surveillance training and in addition some refreshment on community surveillance.

Supervision

To strengthen the surveillance system in each level conducting a supportive supervision is so important. Addis Ketema sub city health office and its majority of next level structure, woreda

health offices as responsible stakeholder do this task. But it is performed either integrating with other activities or as its own task giving a different name, that is an “active search”.

Each of the responsible facility including the sub city health office accomplish this supervision task in its own way by setting priorities and developing the recommended check list.

According to the evaluation study it was recognized that only 4 (36%) of the facility do its supervision or active search on weekly or biweekly base and 3 (18%) of them do this same thing on a monthly base. The rest 36% of the facility whether do not perform the supervision at all or do it in irregular and uncoordinated manner.

Surveillance Attributes

Simplicity of the System

The simplicity of a public health surveillance system refers to both its structure and ease of operation. To identify, easily detect and as well immediately reporting of the notifiable diseases to the respective next reporting entity, simplicity and understandability of the case definition of those diseases for all level health care provider is an entry point. The reporting format, the specific variables included in the format, the way of collecting & compiling the necessary data and the time period for reporting should not also be vague and lack the required clarity.

When evaluating the simplicity of the system, with the exception of one respondent from the woreda level health center all are agreed that the case definition for the selected priority diseases are easy and applicable for case detection by all level health professionals. The assessment also indicated 17 out of twenty or (85%) of the respondent implies that the system allows all level professionals to fill the format correctly or record and report the surveillance data on timely base. Regarding the required time to fill the format, 50% of the respondent suggest that 15min is enough and 45% informed that a maximum of 30 min. is needed. The rest 5% said that 30min. to 1hr is necessary.

However, confirmation of cases on timely base was continue being a challenge for unknown reasons of the national level confirmatory laboratory side, EPHI.

Flexibility

A flexible surveillance system refers a system that could be able to accommodate changes with little additional time, persons or allocated funds. In other words, the system could have an ability to follow up new event, new case definition, new data about an event and new sources of information.

In almost all of the visited facilities, the respondents argued that the surveillance system has not been as such easy to add new variables but the reporting format especially for the immediately notifiable case one could have possibly filled and reported other newly occurring health events in the space provided at the end which is named as others.

In addition to this, most of them believed that the current system was easy to integrated with other systems and did not think them that any changes in the existing procedure of case detection and reporting format would difficult to be implemented.

Data Quality

As clearly depicted in most reference books and guidelines of surveillance, data quality usually assessed on the basis of completeness and validity of the data recorded in the surveillance system. It reflects the completeness of the records, that means any blank-missing or unknown or errors in computing data and it is influenced by simplicity of the surveillance form, clarity of electronic surveillance forms, training and validation.

At all visited health centers and health offices, the investigators tried to examined weekly reports of the facilities at most recent two months and confirmed that above 90% the facilities' reporting formats were clear to read, understandable and complete with the necessary information including zero report.

Acceptability

Acceptability of a surveillance system refers to reflection of the willingness of PHEM's staffs at all levels in implementing the system. The acceptability of the surveillance system mainly assessed by the well engagement of the reporting agents and their active participation in case detection and reporting. All PHEM officers and surveillance focal of governmental facilities of

the sub city informed that they have been accepted the recent functioning surveillance system and believed it is important for public health intervention. And also, they agreed for the use of the standard and community case definitions in identification and detection of cases and have been in practicing appropriate reporting format for their routine surveillance reporting activities. In the context of Addis Ketema sub city, governmental health centers, private health institution and NGO health facilities are the commonly known reporting agents and are expected to involve actively in detecting and reporting health related events. This activity seems a little bit satisfactory in the governmental facilities but less likely in private and NGO institutions. The main reasons were having been lack of awareness & understanding, poor coordination effort of the governmental agencies, most of the private facilities focusing on their profit initiation and negligence of the responsible staffs.

Representativeness

The representativeness of the surveillance system is related to the health service coverage, the reporting rate of the health facilities, the health seeking behavior of the community, the technical capacity of the health care providers and so on.

As a response of the sub city PHEM staffs, the representativeness of the system is somewhat more than good. Because, at present the sub city health coverage and as well the community health seeking behavior showed a dramatic change and reached at satisfactory level. This is due to complete service of the existing & newly functioning health centers at all woreda level and a door to door awareness creation of urban health extension workers in collaboration with community voluntaries.

Timeliness

Reflects the delay/speed between surveillance steps:
recorded in the surveillance system



In other words, it refers the time required for the identification of trends, outbreaks, or the effect of control measures.

As per standard of National PHEM the expected level of report timeliness is 80% and above. However, with the exception of the sub city health office all the rest visited sites of the sub city were not documented date of report sent to next level and it was a challenge during evaluation of report timelines at woreda level.

Completeness

Completeness of the surveillance system weekly report is measured or indicated by dividing the number of facilities that sent report divided to the number of total facilities expected to report. In this assessment it was tried to see the weekly surveillance data report completeness of governmental health facilities of the sub city for the year 2016/17 starting from epidemiologic or WHO week 2-18.

The following graph gives you a very brief description about the timeliness and completeness rate of the sub city surveillance data report for the year 2016/17.

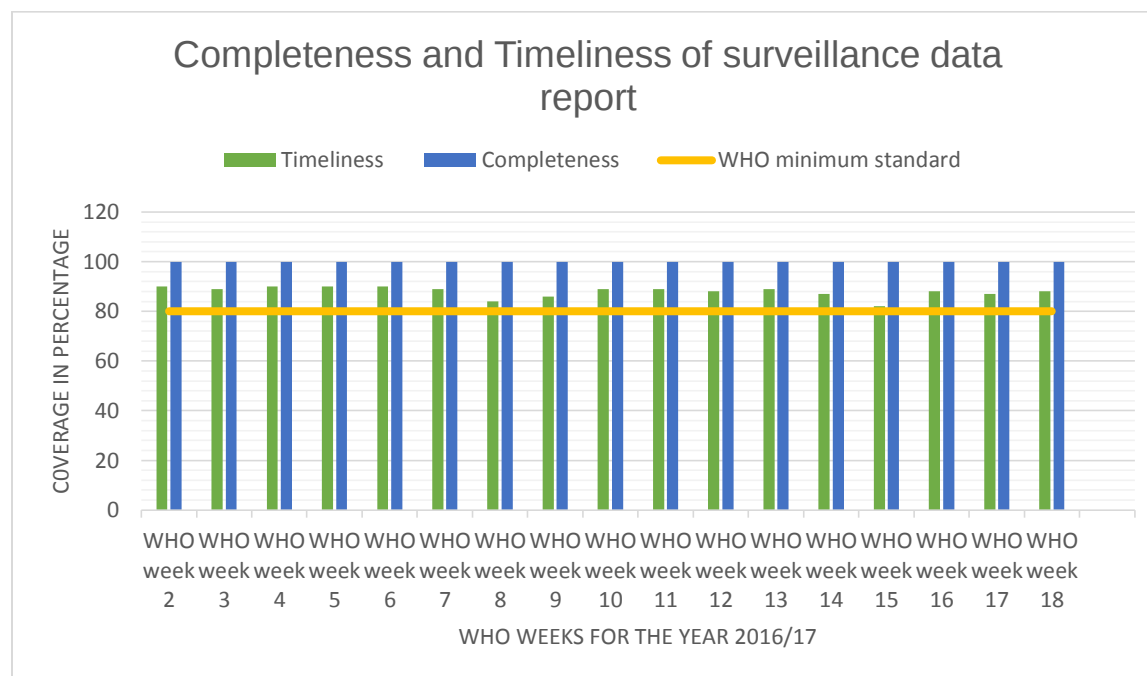


Figure 27. The aggregate timeliness and completeness of PHEM weekly report of Addis Ketema sub city health office by WHO week for the year 2016/17, Addis Ababa.

According to the finding the aggregated surveillance report completeness and timeliness were above 80%, the minimum WHO required standard and it is clearly observed that the report timeliness lies in between 82% and 90% in addition to 100% completeness rate throughout the investigated epidemiologic weeks. This in general indicated that the report timeliness and completeness rate reached at satisfactory level in the sub city.

Usefulness

Respondents in the visited facilities of the sub city have a common understanding on the usefulness of existence of public health surveillance system. All the respondents believe that if there is a functional surveillance system, the system would have contributed a lot for early warning and detection of priority diseases epidemics as a first step.

In the second-place respondent also remarked that public health surveillance is useful for the preparedness, appropriate & timely taking of intervention measures and resources allocation

Thirdly they agreed upon that the surveillance system would have forced the concerned body to conduct the necessary epidemiological investigation for identification of possible causes, risk factors associated with the epidemics and adverse effects.

Furtherly, they suggested that public health surveillance is an important thing for the prevention and control plan, to avoid adverse health related events and the promotion of health and also program monitoring.

Predictive Value Positive

Predictive value positive (PVP) is the proportion of persons identified as having cases who actually do have the condition under surveillance and is possible to assess it by the case definition that actually has the diseases.

However, in the current situation of Addis Ketema sub city, it was not able to measure the PVP of AFP and Acute Malnutrition cases during the assessment of the surveillance system. The main reasons were; no suspected AFP case has been sent for confirmation or all woreda level facilities in the sub city have been remained silent for the year 2016/17 G.C and case confirmation of all suspected cases of Acute Malnutrition was done using case definition but they were not registered the suspected cases and all health care providers in the facilities registered only those acute malnutrition cases identified by the case definition.

Stability (Reliability + Availability)

Refers to public health surveillance system's:

Reliability: the ability to collect, manage, and provide data properly without failure.

Availability: the ability to be operational when it is needed.

Regarding to this attribute, the surveillance system at the sub city and woreda level is used to collect, manage and provide data without difficulty and it is fully operational throughout the time. In addition to this, the investigation also clearly declared that there is no any new restructuring which affect the surveillance procedures and no specific budget line/ dedicated resources for the surveillance activities at the sub city and woreda level. But a recurring turnover of trained PHEM assigned professionals is common at different facilities. These in general create their own trouble in the service at all level or raise a big question in the continuity of the system.

Discussion

All public health surveillance systems should be evaluated periodically in order to monitor how well the systems being operated and determine whether their stated objectives and goals have been met accordingly. From the period in which the PHEM offices established as core process at Federal and Regional level, significant achievements have been recorded on the overall activity of the surveillance system.

In Addis Ketema sub city, surveillance system evaluations were having been conducted at different woredas, with the assumption that the findings of these assessments would be a valuable input in strengthening surveillance activities.

When assessing the case detection and registration, it was simply observed that majority of the facilities have surveillance system guideline, rumor log books and standard case definitions for all the country's priority diseases. But a problem was seen in posting their standard case definitions and awareness creation. All the visited facilities developed as a trend making an awareness and being posted standard case definitions for commonly known limited cases only,

like AFP, Measles, AWD, NNT, Maternal Death and is less likely for cases of Acute Malnutrition.

Regarding to the knowledge about an action threshold level of priority diseases, the same thing is applied by all the assigned PHEM staffs of the facilities. Everyone could possibly have described a minimum of two from those commonly known repeated cases and no one could include the cases like acute malnutrition in its trial.

Case confirmation in the surveillance process refers to the epidemiological and laboratory capacity for confirmation. The capacity of specimen collection, handling and transportation and as well case confirmation mostly done by governmental health facilities but confirmation of cases on timely base was seen still one big challenge.

The assigned PHEM or surveillance focal staffs in different facility of Addis Ketema sub city have been a well-trained professional with a sufficient knowledge and skill of computer that enable them to analyze and interpret the reported data.

Epidemic preparedness and response committees were well established in all assessed facilities of the sub city, though that there are unanswered questions about specific source of budget and written plan that provide a supportive guidance for the overall activities.

To strengthen the surveillance system, conducting a supportive supervision and providing regular, timely and relevant feedback is a crucial step. Addis Ketema sub city health office and its majority of next level structure, woreda health offices as responsible stakeholder to do the tasks but not done it in planned and coordinated ways.

More of the woreda health offices have an experience of addressing feedbacks in oral message and do its supportive supervision weekly or every two weeks and certain health office have experience of delivering feedback in both oral and written form and the necessary supervision on weekly, bi weekly and monthly bases depending the priority being set by them. The rest which reached up to 36% of the total neither performed the supervision at all, if it is done, usually in irregular and uncoordinated manner.

Providing basic surveillance training and other supportive refreshment for those technical staffs working in PHEM department in sub city and woreda level health offices and the assigned surveillance focal in health centers were common in the sub city. As a big challenge always being happen in the sub city, woreda health offices and different health centers was recurring turnover of the trained staffs and a now and then shifting of their positions.

According to the evaluation, it was able to reached an understanding that the case definitions were easy and applicable for case detection and the reporting formats were easy to fill out; these findings were matched with the CDC, updated guideline that is the simplicity of a public health surveillance system.

The evaluation process also tried to reviewing the most recent two months' reports of priority diseases, could not possibly observed any blank or unknown responses to the variable in each of the reported forms; Data of high quality will have high percentages of such responses.

When we analyzing the reporting completeness of governmental health facilities of the sub city for the year 2016/17 By WHO weeks starting from 2-18 weeks, 100% achievement was seen at the sub city level and also confirm that the reporting timeliness reached to 90%, which were above the minimum WHO required standard, 80%.

In almost all of the visited facilities, the respondents reached in similar agreement that a change in the existing procedures of case detection, reporting and formats will not be difficult to implement or it can accommodate changes; this finding was the same as that of flexible systems can accommodate, for example, new health-related events.

All PHEM officers and surveillance focal of the reporting agents of the sub city have a common thing that they have been accepted the recent functioning surveillance system and well involved in practicing the current reporting format to the surveillance activities: this finding fulfills the CDC updated guideline of acceptability, reflect the willingness of persons and organizations to participate in the surveillance system.

The health seeking behavior and health coverage of the visited sites have been somehow at satisfactory level as the integrated services of the governmental health centers and the private facilities and as well an extensive awareness creation.

Limitation of the Evaluation Process

- ❖ Due to lack of transport access, the study was conducted on limited governmental health facilities which might be limited its representativeness.
- ❖ Due to poor recording and handling of some data, it was unable to get an important data such as report timeliness from woreda level health facilities.
- ❖ Private health facilities were not included in the assessment.
- ❖ Inadequate literatures of similar study for better assessment.

Conclusion

Periodic assessment of public health surveillance system is a key activity to identify strengths and weakness of the existing system. In the assessment process, it was seen that a problem of posting standard case definition and awareness creation equally for all the country's priority diseases in the health facilities as a whole. Most of the facilities done this activity as fashion for only limited commonly known cases, like AFP, Measles, AWD, NNT, Maternal Death and no one could have observed possibly done this for the case like Acute Malnutrition. During the knowledge assessment of an action threshold level of the country's priority diseases, the same thing has been observed, majority PHEM staff's knowledge regarding the action threshold level moving around those commonly known the above-mentioned cases.

Epidemic management committee was formally established in all woredas health offices, health centers and as the same time at the sub city health office based on the guideline. However, its continuity and functionality always being in doubt since there was not any written planned the overall annual activity and unanswered question about its specific budget line source.

The way of supportive supervision and feedback delivery system in those woreda health offices was not as such strong; it lacked coordination and scheduled plan. Even in limited offices this activity was a strange matter and not performed at all. Specimen is commonly referred to national laboratory for confirmation for those selected priority diseases (like measles and AFP) by all visited governmental facilities. However, the feedback from national laboratory was not reached at all or it was too late.

In order to improve their educational level and current professional status PHEM staffs in the health offices and surveillance focal in the health centers have been joined various colleges and

involved in different upgrading chances. Because of this recurring event, shifting position and turnover of surveillance trained staffs is common and this also put on its own influence on the sub city's public health surveillance system.

The system evaluation also indicated that the reporting completeness of woreda health office of the sub city for the year 2016/17 by WHO weeks starting from 2-18 weeks, 100% achievement was seen at the sub city level and also seen that the reporting timeliness reached up to 90%, which were above the minimum WHO required. standard, 80%.

Recommendations

- ✦ Utilization of National PHEM guideline and different manuals for management of prioritized diseases should be heightened at all levels.
- ✦ The common practice all facilities that has been developed as a trend in posting of standard case definitions and awareness creation for limited notifiable diseases has to changed. Give equal attention for all of the country's priority diseases in this regard and the Knowledge's about action thresh hold level of the country's priority diseases of the PHEM staffs also modified in the same way.
- ✦ Budget should be secured at all level established Epidemic response and preparedness committees and their annual activities should also be guided with developed written plan.
- ✦ Ways of supportive supervision and feedback delivery mechanisms should be strengthening and maintained their regularity at all level from the sub city health office to woreda level health offices.
- ✦ The feedback for commonly referred specimen to national laboratory for confirmation for those selected priority diseases (like measles and AFP) should not be delayed and returned on timely base.
- ✦ The challenging factor which is a now and then turnover of trained surveillance professionals by different reasons has to be resolved by providing basic surveillance training and additional refreshment on regular base.

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Chapter IV- Health Profile Description Report

4.1 Health Profile Description for Woreda 3 of Addis Ketema sub city, 2017.

Abstract

Background: Health profile is a program to improve availability and accessibility for health and health related information. Providing health profile at community level is an important step to clearly understand the health and health related problems of that community and it is also essential in prioritizing those prominent problems. In relation to this there is a great gap in developing health profile at district or wereda level. Therefore, we put our effort in providing this health profile document for one of the district in Addis Ketema sub city, that is wereda 3.

Objective: The objective of the study is to provide an overview of the demographic, geographic, socio economic and health status of the community and to identify priority public health problems.

Methods and materials: The data was collected by conducting descriptive cross-sectional study through standard questionnaire. Reviewing secondary data and directly asking information from concerned body also used.

Finding: The administrative unit of woreda 3 of Addis Ketema sub city contained 2 sub woredas, 9 Ketenas and 80 Blocks. It covers an area of 89.06 hectares and has an estimated total population of 19,311. Educational activities of the district undergone with 9 pre- primaries, 7 primaries and 2 secondary and preparatory schools and a total of 7 (1 gov. & 6 private) health institutions are actively involved in addressing the health care need of the community. Within the health care need activities 718 new & 1,263 repeat accepters of modern contraceptives were served from 2007 to 2008 EFY, women getting ANC 1st & ANC 4th service from skilled provider for the year 2008 reached 80.25 % and 54.25 % respectively, delivery attended by skilled health personnel for this same fiscal year showed a 48.75% and PNC checkup coverage was 84.06%. And again, EPI coverage of the district for the period indicated 86.3% for penta 3, 86.6% for pcv 3 and 84.8% for measles. Communicable disease program assessment like TB case detection rate, TB treatment success rate & TB cure rate were 72 %, 71 % & 50 % respectively for 2008 EFY and also HCT, PMTCT & HIV chronic care assessment showed that 168 peoples & 652 pregnant women were screened for HIV/ADIS and only 231 PLWHIV clients were accessed for chronic HIV care throughout the 4 years' ART service experiences of the facility.

Conclusion: Some limited activities of the facility such as PITC, VCT & PMTCT have been lacking consistence in their coverage and the activities like ANC service coverage (ANC 1st & 4th), delivery service status, Contraceptive acceptance rate, TB case detection, treatment success & cure rate showed a

lower achievement. There is a challenge in enrolling PLWHIV clients in the chronic care services as needed.

Introduction

Background

A community health profile is a collection of information about the characteristics of the community, the health resources within the community, data describing the community and the community's perceptions of health. The information may include data already collected and published about a community or information collected by organizations or individuals creating the profile. (1)

Health profile is a program me to improve availability and accessibility for health and health related information. It provides a snapshot of the overall health of the local population and highlights potential problems through comparison with other areas and with the other national average. Health profiles are designed to help local government and health services to identify problems in their areas and decide how to tackle them. (2)

In addition, health profile assessment presents and discusses health related data and important health related indicators to describe the health and related sociological factors in the geographic area under discussion.

In line with this we exerted our effort to prepare this wereda 3 Administrative Unit health profile by including those health-related indicators and related sociological factors.

Statement of the Problem

Providing a profile at district level help in describing the residences in that district and the factors affecting those residences' health in a way that they will instantly recognize and sets out proposal for change that will generate enthusiasm and energy. It should provide a focus for both community involvement and political support.

The study will be done considering it should provide relevant information for government, non-government organizations, policy makers and other researchers which help them for taking appropriate decision making and designing appropriate intervention, develop strategies and minimize shortage of aggregate data for further research and policy making.

Significance of the Study

One of the most important instruments in the struggle for health is information. It can be used to secure community interest and political commitment. It can also measure progress in improvement in health. A high quality, which means an accurate and up- to- date health profile is a vital source of information.

Providing health profile at community level is an important step to clearly understand the health and health related problems of that community and it is also essential in prioritizing those prominent problems. In relation to this there is a great gap in Addis Ababa City Administrative in general for documenting a well-organized and completed health profile at district or wereda level. In order to address this challenge, we will try our best in providing health profile document for one of the district in Addis Ketema sub city, that is woreda 3.

Objectives

General Objectives

The general objective of the study is to provide an overview of the geographical location, demographic factors, health and socio-economic status of the community and to identify priority health problems by producing a health profile for the district (Addis Ketema sub city, woreda 3, 2009 E.C).

Specific Objectives

- To describe social, demographic and geographical status of woreda 3
- To assess and describe health and health related issues like health status and health indicators
- To describe existing community health problem
- To identify priority problems

Methods and Materials

Study Area

This health profile description was conducted in Addis Ketema sub city Wereda 3 administrative area, Addis Ababa, Ethiopia.

Study period

All required data was collected, analyzed and interpreted from February 20 to March 28, 2017.

Study Design

Descriptive cross-sectional study was conducted using standard questionnaire. Hard copy and Softcopy of documented data (Secondary data) was reviewed to generate different data. In addition, interviewing and discussion with concerned body was also made.

Data Collection Methods

The data was collected and reviewed from different reports and formats which archived in health facilities, sub-city and woreda health office as a secondary data by using structured questionnaire and also by directly asking information from concerned body. The facilities and offices visited in gathering this health and other health related data were woreda health office, education office, water supply & sanitation management, woreda administrative office, Culture and tourism office. Different literatures and publications also reviewed to incorporate other useful information.

Data Analysis Procedures

The collected data was compiled and analyzed using Microsoft Excel 2016 and Microsoft Word 2016 in accordance with the proper standards for final analysis and further interpretation or outcome.

Dissemination of Result

The report of this health profile was disseminated to Addis Ababa university school of public health, Addis ketema sub city health office and to different organizations which were interested on this health profile.

Ethical Clearance

For ethical clearance an official letter was obtained from AAU Health Science College and submitted to Addis Ketema sub city Health Office. Then a formal letter was obtained from Addis Ketema sub city health bureau as a permission letter and submitted to study Woreda' different offices'. The purpose of the study was explained to the concerned authorities and verbal consent was obtained. Confidentiality was kept throughout the process.

Main Finding and Interpretation

Geographic Location and Area of Wereda 3

Addis Ababa, which is the capital city of the Federal Democratic Republic of Ethiopia and hub of political, economic and cultural activities of the country lies 9°1'48"N latitude and 38°44'24"E longitude. The city is located at the heart of the country, at an altitude ranging from 2,100 meters at Akaki in the south to 3,000(9,800 ft.) meters at Entoto Hill in the North. This makes Addis Ababa the third highest city in the world, after La Paz and Quito in Latin America. Its time zone is categorized in East Africa Time (UTC+3). The city occupies a total area of 540 Sq. Km.

Addis Ketema sub city is one of the ten sub cities in Addis Ababa city Administration. It situated in the center of Addis Ababa, bounded by Lideta sub city in the South-East, Kileleshwa in the West and Arada and Gulele in the North East direction. According to the 2007 population and housing census report Addis Ketema sub city cover an area of 9.98 Sq. Km (863.84 hectares)

Wereda 3 Administrative Unit is one of the districts in Addis Ketema sub city. It is located at the South West area of the sub city. The district shares boundaries with Lideta sub city in the South-East direction, wereda 4 & wereda 8 Administrative unit from Addis Ketema sub city in the North and wereda 2 Administrative unit of Addis Ketema sub city in the North West direction. According to Addis Ketema sub city Finance and Economy Development Bureau's 2007 study wereda 3 covers an area of 89.06 hectares(ha) that is 10.31% of the sub city total area.

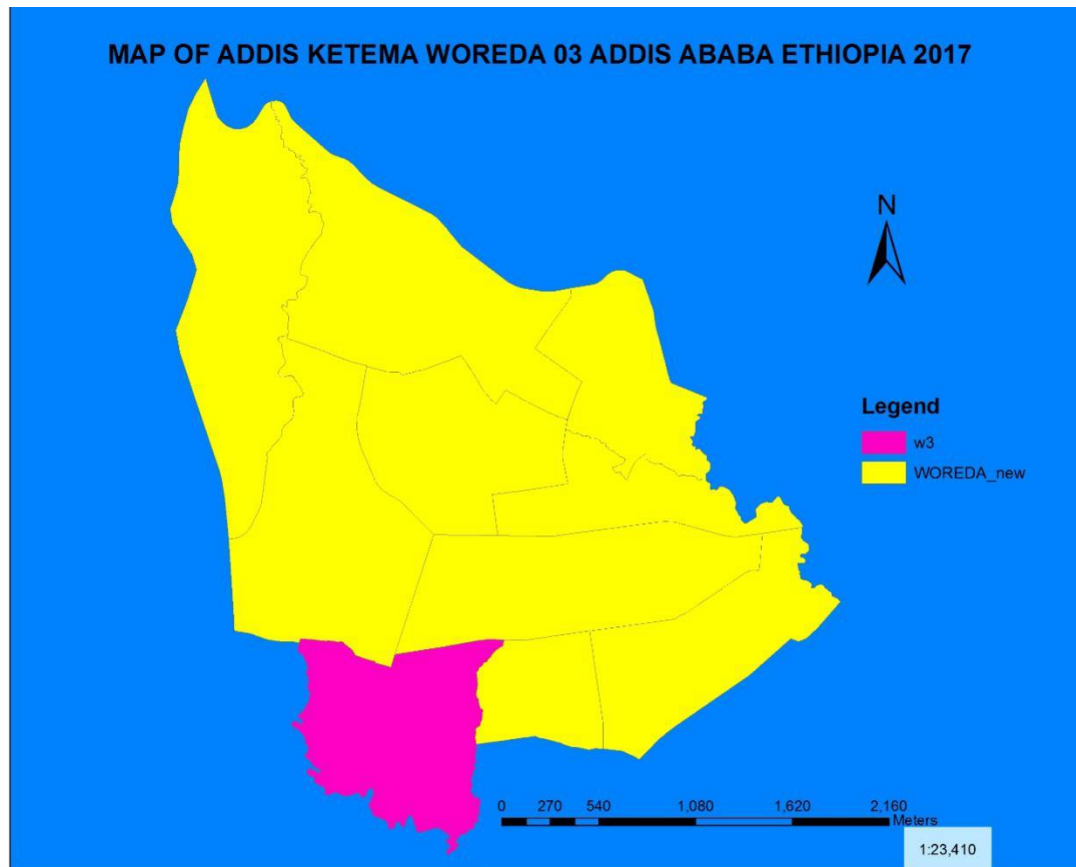


Figure 28. Map of Addis Ketema sub city and Wereda 3 district.

Topography and Climate

Addis Ababa is built on the steep escarpment of Mt. Entoto in the North (2900 masl) to the South with an average altitude of 2400 masl. This varying topography of the city has affected its spatial expansion favoring the relatively flat landscape in the South as a major factor contributing to the unsafe housing condition in the city, as cited in (EMA, 1988).

From the Elevation map we can see that Addis Ketema is characterized by a homogeneous type of topography with insignificant elevation difference. Generally speaking, in the sub city, the altitude ranged from 2343 to 2546 meters above sea level which has a range of 203 meters.

Addis Ababa has a Sub-tropical highland climate with average temperature differences of up to 12.2°C. The high elevation moderate's temperatures year-round, and the city's position near the equator means that temperatures are very constant from month to month (Atlas of Addis Ketema sub city) and the city mean annual rainfall is about 1179.6mm (CSA, 1999). Addis Ketema sub

city and its sub divisions, the 10 woredas including woreda 3 as part of Addis Ababa shared these topography and climate zone.

Administrative Units

Addis Ababa administrative divisions were restructured in to 10 Kifle Ketema, literally “Town Division” or sub city administrations since 2003 E.C and the number of kebele was reduced to from 305 to 116 woredas/kebele.

The current woreda 3 Administrative unit established as Woreda Administrative unit like other woredas’ in Addis since 2003 E.C. by reducing four former kebeles’ of woreda 6 in to a single woreda, that is woreda 3 of Addis Ketema sub city.

At present the administrative unit of woreda 3 of Addis Ketema sub city sub divided again in to 2 sub woredas’ ,9 Ketenas’/ Seferes and 80 Blocks.

Population and Population Structure

The population aspect presents the socio demographic characteristics of the population. Under this section in general we discuss issues like estimation of total population size, distribution by age and sex, sex ratio, age dependency ratio, average household size etc.

According to Addis Ketema Sub City Police Commission, community policing department’s woreda based population profile reports, woreda 3 administrative unit of Addis Ketema sub city currently has total population of 19,311. Of which 9,068 (46.95%) are males and 10,243 (53.04%) are females and the male to female sex ratio is 0.88. The report also describes that a total of 3,551 households are found in the district and 1,985 are headed by male and the rest 1,548 are headed with female.

This woreda based population profile, discussed in detailed the distribution of the administrative unit population based on different structures, Such as on the bases of ketene/sefere, religious, ethnicity and marital status aspects, household types and different age category. The following tables, graphs and charts are provided in support of better description of those population distribution structures.

Table 15. Population distribution of wereda 3 of Addis Ketema sub city based on Ketena & Sex, 2017.

S. No	Ketena	Population size			Remark
		Male	Female	Total	
1	1	1454	1816	3270	
2	2	1296	1431	2727	
3	3	1094	1105	2199	
4	4	774	865	1639	
5	5	1463	1568	3031	
6	6	743	937	1680	
7	7	629	801	1430	
8	8	691	740	1431	
9	9	920	975	1895	
Total		9064	10,238	19,302	

The above table is provided to give a clear picture regarding the population distribution of wereda 3 administrative taking their ketenas' and sex as main categories.

The graph below also provided in support of the above tabular presentation and indicated population distribution by sex and ketena

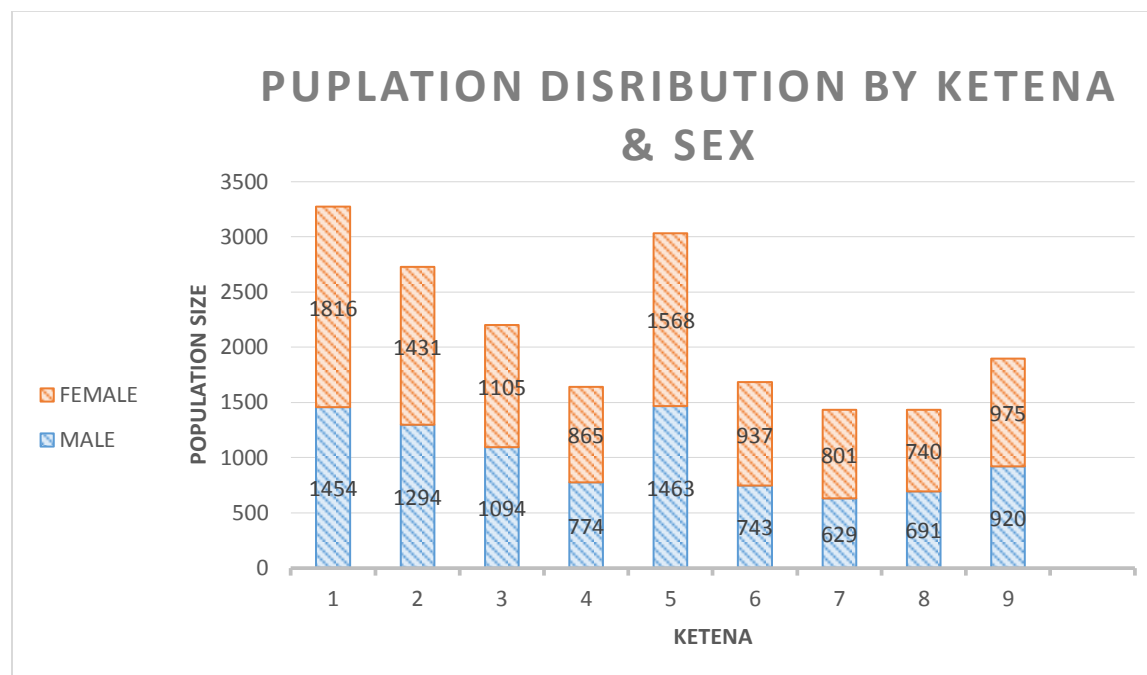
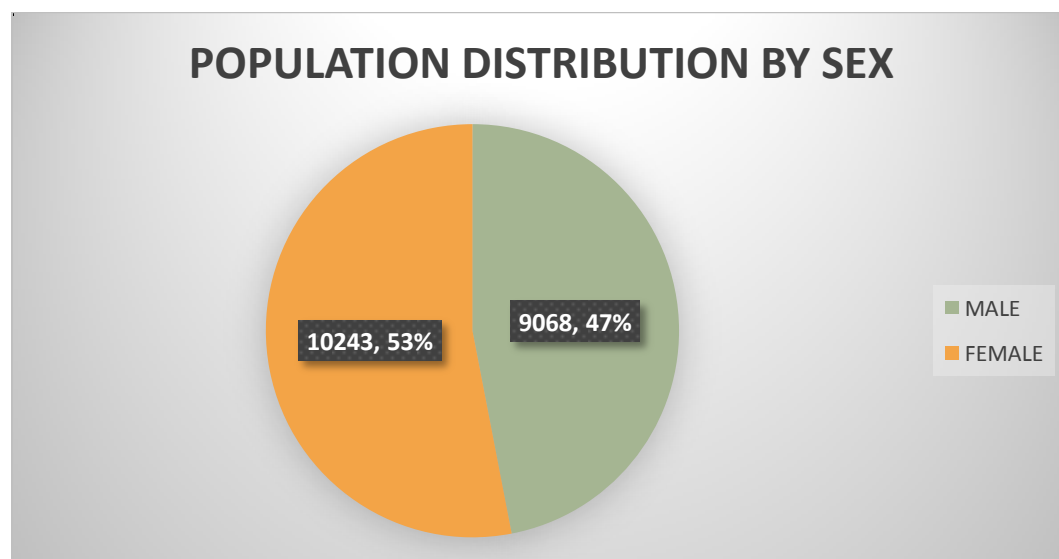


Figure 29. Population distribution by Ketena & Sex of wereda 3 of Addis Ketema sub city, 2017

Table 16. Population distribution of wereda 3 of Addis Ketema sub city by Age & Sex category,2017

S. No	Population structure	Population size	
1	Population distribution by age	Children (up to 18 years' old)	6042
		Youth (19 to 35 years' old)	7455
		Adult (36 to 60 years' old)	4289
		Old age (61 and up above)	1525
		Total	
2	Population distribution by sex	Male	9,068
		Female	10,243
Total			19,311

In the above tabular presentation, we could able to see population distribution of the administrative unit by different age groups and the sex composition as a whole. But to have a clear understanding about sex distribution in percentage, the chart below is provided.

**Figure 30. Population distribution of wereda 3 Addis Ketema sub city by Sex category, 2017**

The profile that is organized by Addis Ketema Sub City Police Commission, community policing department again brief worded 3 community's economic status, religious and ethnic composition in the following manner.

Socio economic status of woreda 3 dwellers;

- Governmental employees.....1,420
- Private organization employees.... 1,801
- Self-employed5,613
- Unemployed.....4,518
- Housewives.....2,302

Religious Compositions:

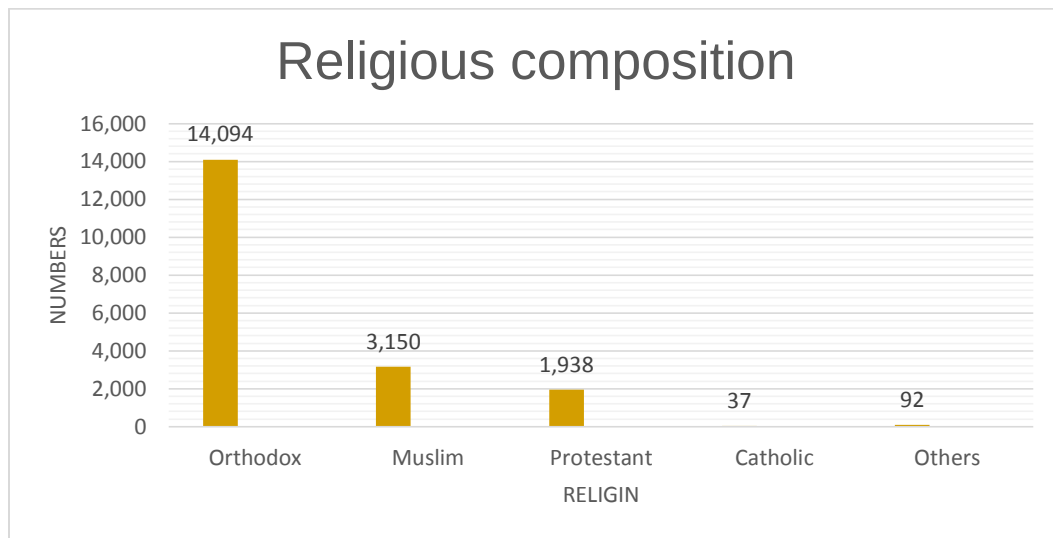


Figure 31. Religious composition of wereda 3 community, Addis Ketema sub city, 201

Ethnicity or ethnic composition of the district population

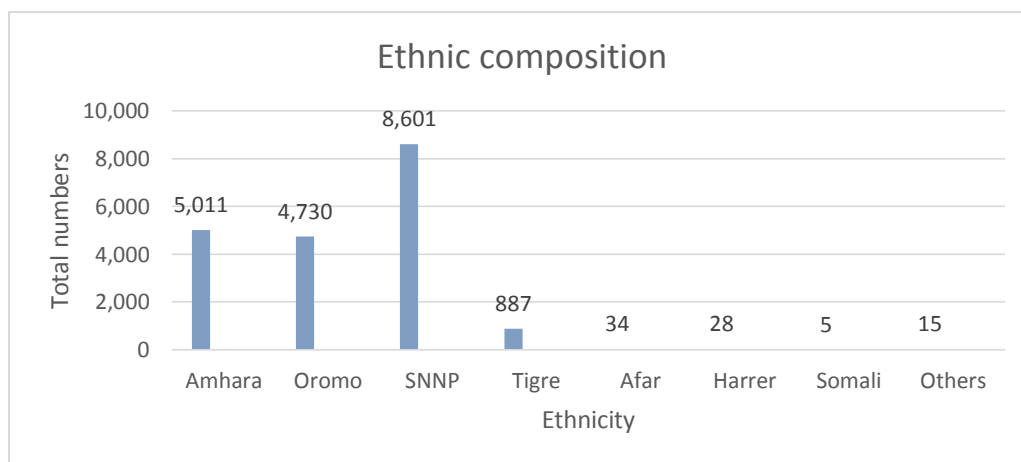


Figure 32. Ethnic distribution of wereda 3 community, Addis Ketema sub city, 2017.

Vital Statistics

Vital statistics at sub city and woreda level as such not a strong activity. There was some initiation in the meantime on this regard but not go head as expected. Therefore, we could not get data of vital statistics like IMR, CMR, CBR, CDR, MMR and could include under this study.

Educational Coverage

It was Addis Ababa where the first modern school, Menilik II opened in 1908. Since then the number of schools at different level had been opened and become functional.

Education is the basis of countries social, economic, cultural, and political development. In Ethiopia a remarkable success has been achieved in the education sectors. However, still challenges pertinent to access, equality, equity, efficiency and promotion of standard education system.

Because of the primary due attention which is given to the education sector by City Administrative of A.A and the Education Office of the Administrative Unit, it has been done a lot of works on education coverage and corresponding quality within the ten sub cities and among all woredas in Addis and also has achieved a remarkable success.

Based on Addis Ketema Sub City Education Office 2009 EFY annual education report, there are 40 primaries, 10 secondaries' and preparatory, 49 pre-primaries and 10 adult education schools are found in the sub city. Of which 9 pre- primaries, 7 primaries and 2 secondary and preparatory schools are found in woreda 3 administrative unit of the sub city.

Table 17. Distribution of educational facilities of wereda 3 of Addis Ketema sub city by ownership, 2017

S. No	Type of Educational Facility (school)	Ownership		Total
		Government	Private	
1	Kindergarten (preprimary)	2	7	9
2	Primary School	3	4	7
3	Secondary School	1	1	2
4	Preparatory School	0	1	1

The pie chart below is provided to show woreda 3 educational facilities distribution in types and their percentage as a whole.

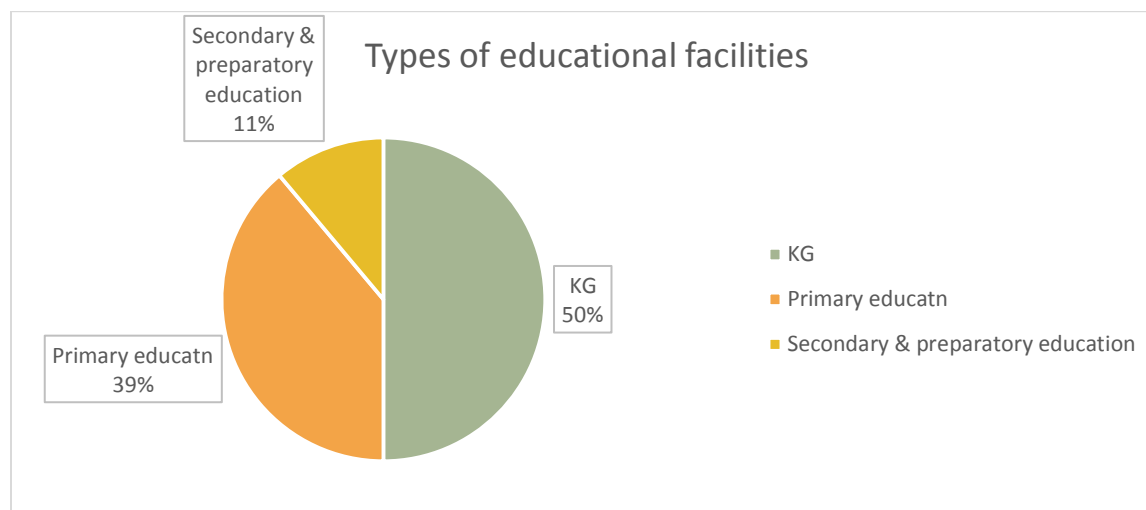


Figure 33. Types and percentages of Educational Facilities in wereda 3 Administrative Units of Addis Ketema Sub City, 2017

Table 18. Distribution of students of wereda 3 administrative unit, Addis Ketema sub city by sex and facility type, 2017.

S. No	Description of facility	Participation status		Total	Remark
		Male	Female		
1	KG	583	587	1170	
2	Primary	1714	1959	3673	
3	Secondary & prep.	733	874	1607	
Total		3030	3420	6450	

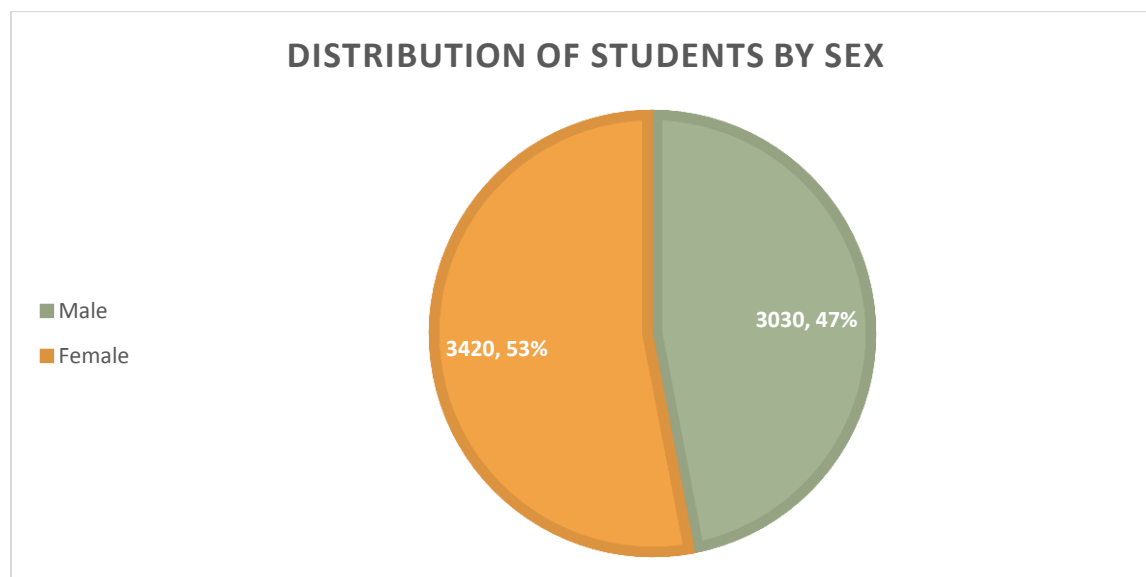


Figure 34. Distribution of students of wereda administrative unit, Addis Ketema sub city by sex, 2017

Table 19. Enrollment status of regular students in different educational facilities of the administrative unit of woreda 3, 2017.

1. Regular Pre-Primary Schools							
KG School based on ownership	Plan			Performance			Achievement in %
	Male	Female	Total	Male	Female	Total	
Government	199	204	403	243	217	460	114.14
Private	359	379	738	340	370	710	96.2
Total	558	583	1141	583	587	1170	102.5
2. Regular Primary Schools							
Primary Schools based on ownership	plan			Performance			Achievement in %
	Male	Female	Total	Male	Female	Total	
Government	1423	162	3045	1328	1592	2920	95.9
Private	403	430	833	386	367	752	90.28
Total	1826	2052	3878	1714	1959	3673	94.71
3. Regular Secondary & Preparatory Schools							
Regular Secondary & Preparatory School based on ownership	Plan			Performance			Achievement in %
	Male	Female	Total	Male	Female	Total	
Government			1200	573	729	1302	108.33
Private			448	160	145	305	78.12
Total			1648	733	874	1607	97.51

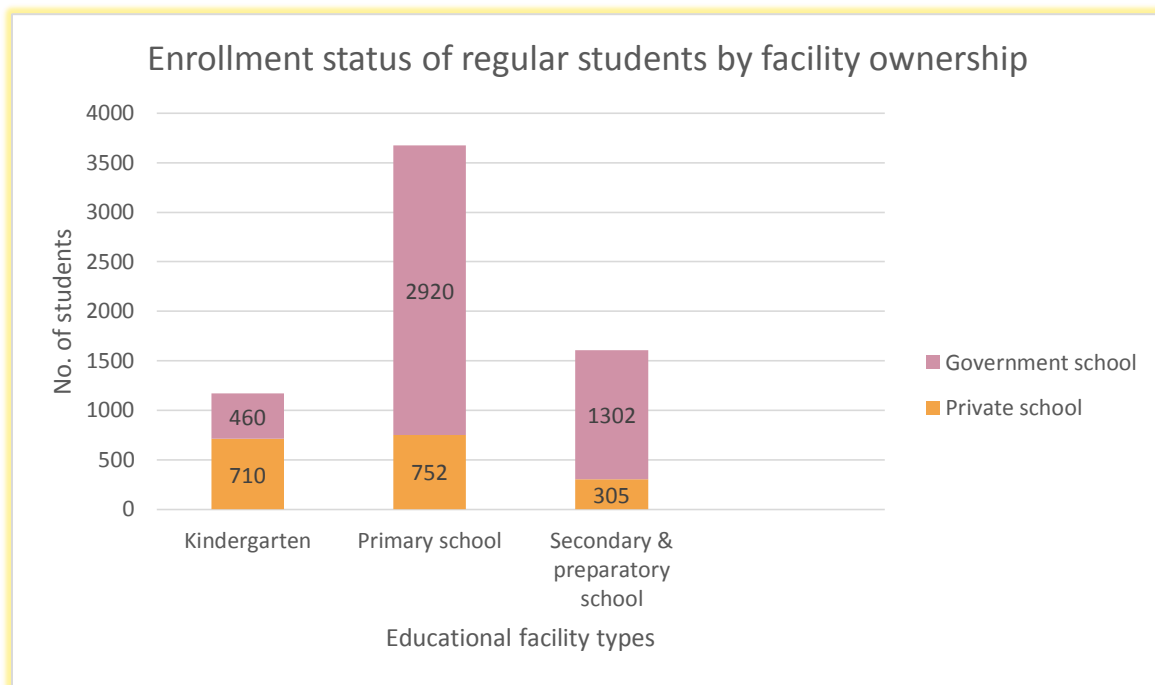


Figure 35. Enrollment status of students in different school of the administrative unit of woreda 3 based on ownership, Addis Ketema sub city, 2017

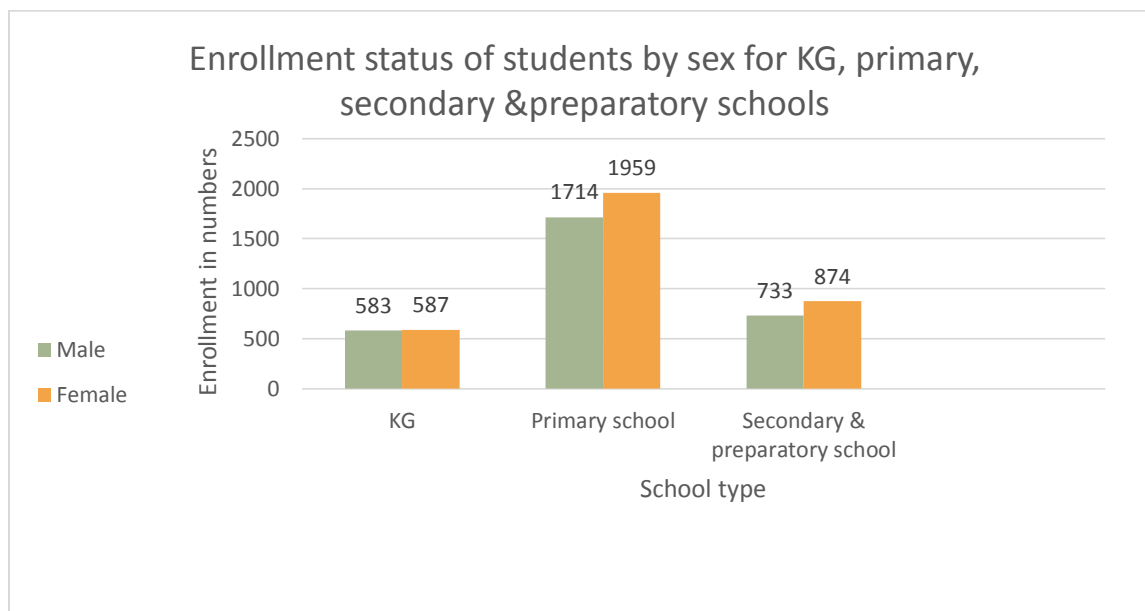


Figure 36. Enrollment status of regular student in educational facility of woreda 3 administrative unit based on sex, Addis Ketema sub city, 2017.

Table 20. Distribution of teachers by their title & sex in governmental schools in woreda 3 Addis Ketema sub city, 2017.

S. No	Type of school governmental schools	No. of Teachers by their titles and sex												Total
		Certificate			Diploma			Degree			Masters and above			
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1	Preprimary	0	18	18	1	0	1	0	1	1	0	0	0	20
2	Primary	0	0	0	61	55	116	29	20	49	0	0	0	165
3	Secondary & Preparatory							91	22	113	5	0	5	118
	Total	0	18	18	62	55	117	120	43	163	5	0	5	303

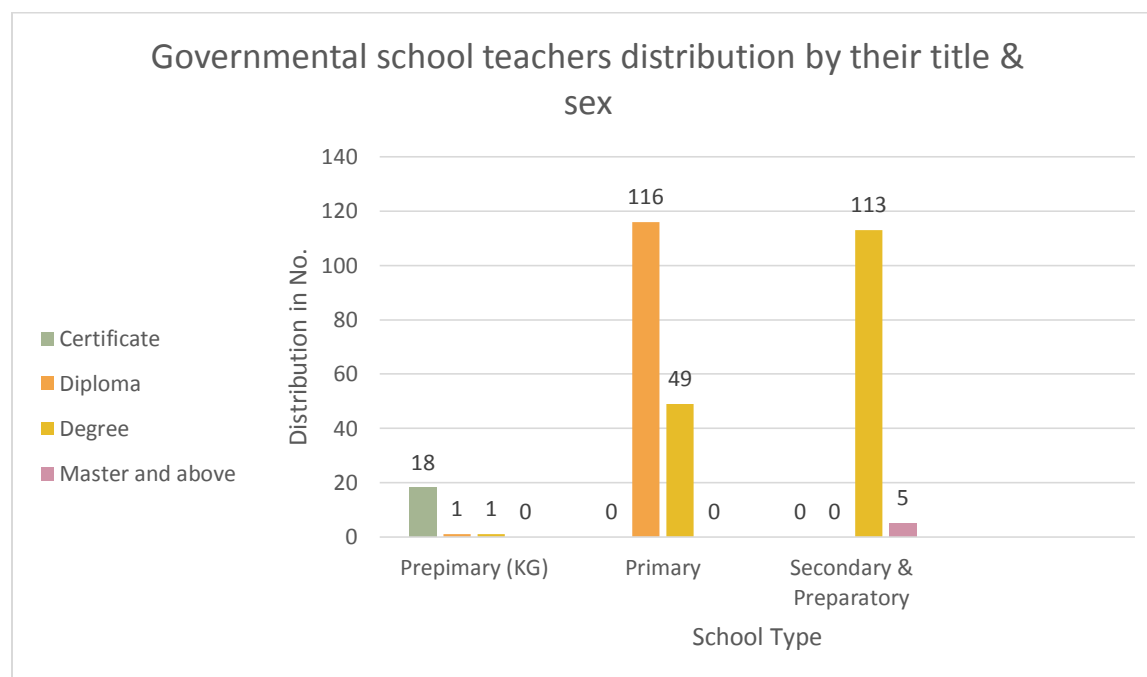


Figure 37. Distribution of teachers by their title in governmental schools of woreda 3 Addis Ketema sub city, 2017.

Table 21. Teachers distribution in non-governmental school of woreda 3 of Addis Ketema sub city on the bases of their title & sex, 2017.

S. N o	Type of school	No. of Teachers by their titles and sex												Total
		Certificate			Diploma			Degree			Masters and above			
		Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	
1	Preprimary	1	44	45	0	16	16	0	9	9	0	0	0	70
2	Primary	0	9	9	10	5	15	25	19	44	0	0	0	68
3	Secondary and preparatory							19	1	20	0	0	0	20
	Total	1	53	54	10	21	31	44	29	73	0	0	0	158

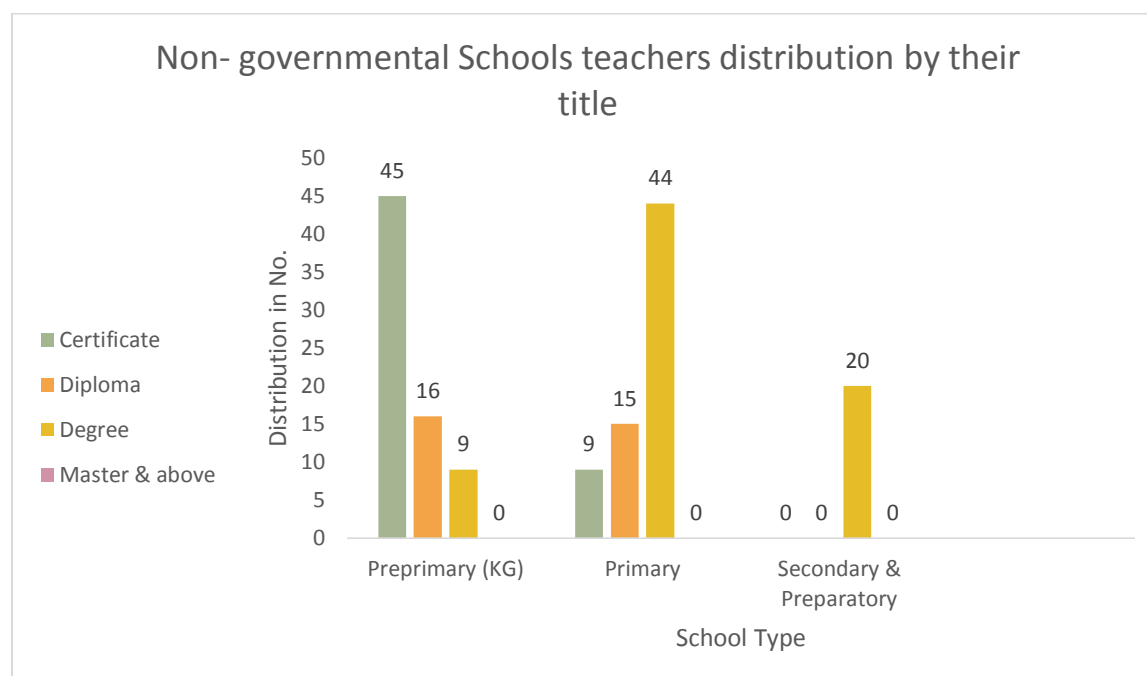


Figure 38. Teachers distribution in non-governmental school of woreda 3 of Addis Ketema sub city on the bases of their title, 2017

Socio-economic Conditions

Many socio-economic factors are known to be associated with health status. Items which might be included in the socio-economic conditions of any given society are education, employment, income, crime and violence, cultural participation and the likes.

In this section we try to discuss employment status and income sources of Addis ketema sub city woreda 3 dwellers’.

According to Addis ketema sub city community police woreda 3 population profile documents for 2009 E.C. from the total productive dwellers of the district; 5,613 are self-employed, 1,420 are governmental employees and the rest 2,302, 4,518 and 1,801 of the population are housewives, unemployed and employees of private company respectively.

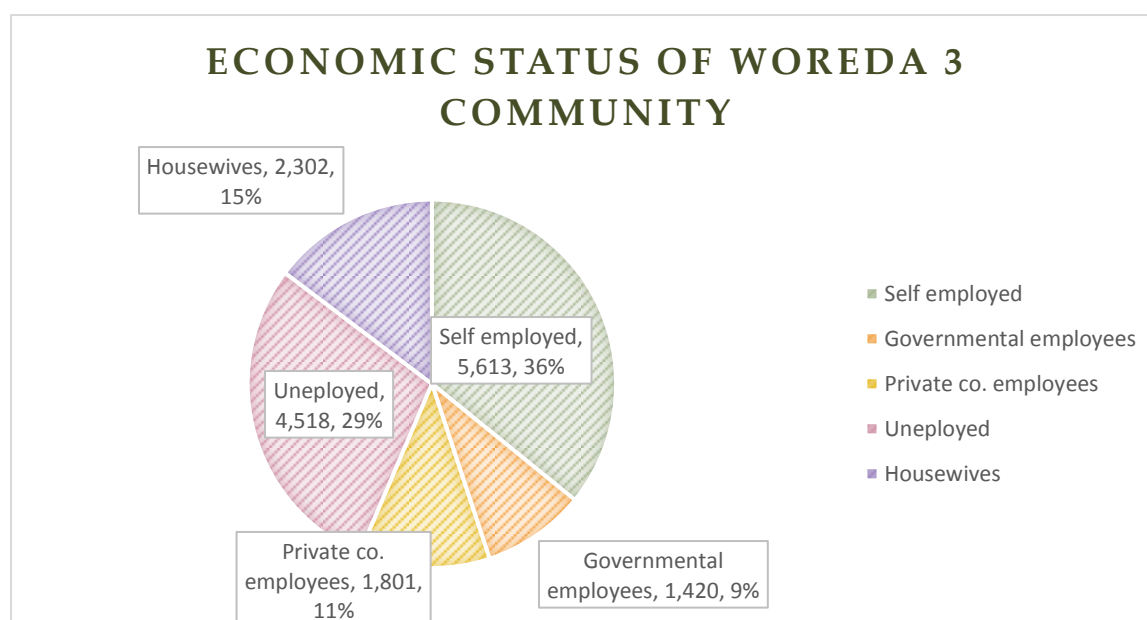


Figure 39. Economic status of dwellers in woreda 3 administrative unit, Addis Ketema sub city, 2017.

The report also describes the types and numbers of organizations that are recently found in the district and serving the community. Namely, 459.... Trade houses; 10.... Schools; 6.... Health facilities; 5...Gov. offices; 4.... Plc. and 1... Gas station in general.

Communication and Utilities

In this section we try to discuss access to transport, electric power supply and telecommunication service of the population. These services in general vital economic sectors that help people in swift movement from place to place, power to light and exchange of information between communication participants.

Taxis, mid buses and public buses are the dominate transport service for the public of the district. According to the 1999 census of Ethiopia, more than 95% of the housing units in all the sub cities of A.A have electricity. Office Mayor Performance Management Directorate indicated that this figure rose to 99.01% in the year 2004 E.C.

Water supply

Increasing access to improved drinking water is one of the Millennium Development Goals that Ethiopia has adopted. The source of water is an indicator of whether it is suitable for drinking. Sources that are likely to provide water suitable for drinking identified as improved water. This includes a pipe source, a public tap/stand pipe, bore hole, a protected well, a protected spring and rain water. (2014 EMDHS)

The city administration Addis Ababa provided water for its residents from underground (70,152,807 cubic meter) and surface water sources (42,062,760 cubic meter). Regarding water coverage, it had risen from 52% in 2000 E.C to 73% in the 2003 E.C and made outstanding performance in the year 2004 and reached 94%. The amount of water production per day also shows a significance improvement from 232,000 meters cubed in 2000 to 374,000 meters cubed in the year 2004 E.C and the per capita water consumption of the city was 110 liters per person.

Environmental Sanitation and Sewerage System

This topic discussed the issues like households' access to any type of latrine, safe water supply of the communities, solid & liquid waste management systems. Studies regarding sanitation & sewerage system at regional level indicated that most of the housing unit in urban area disposing solid waste through vehicle or container and also that sewerage can be handled both vehicles & sewerage line. This also true in the context of woreda 3 district even though there has been a big problem in the disposing time & process. Data regarding the coverage of safe water supply, households access to latrine and liquid waste management (sewerage system) is poor in the woreda 3 unit. Do not show clear coverage status but showed that they are the serious problems of health system and has difficulty in solving because of the system yet not well developed.

Health Sectors Expenditure and Financing Source

Based on the information from Addis Ketema sub city Finance & Economic Development office, the annual budget allocated to woreda 3 health center of Addis Ketema sub city was 6,724,328.00 birrs for 2008 Ethiopian budget year. This includes 3,932,256.00 birrs for salary and 2,792,072.00-birr expense for administrative. And the total per capital expenditure of the facility for this same budget year was 6,952,195.00 birrs.

The sub city Finance & Economic Development Office also indicated that the annual budget allocated for wereda 3 health center of the sub city for the year 2009 E.C including 4,373,080.00 birrs of employees' salary and 3,917,813.00 birrs of administrative expense is 8,290,895.00 birrs. The budget has shown 23.3% increment as compared to the previous year budget.

Health System

General Information

Health institutions, infrastructures and personnel are important inputs that help to ensure healthy society. To bring the expected health at societal level, the city administration of A.A. has been made great effort by increasing the number of health facility and improved their services for the past ten years.

Woreda 3 health center of Addis Ketema sub city is also one of the facilities that has been opened in this expansion program and has secured its service with the objective of producing health society. Its structure has been organized under two main core processes and three supportive main case teams. The two main processes are Disease Prevention and Health promotion core process owner and Curative Service core process owner. And also, the three supportive main case teams include Finance and purchase supportive case team, Human Resource Management supportive case team and Health Service documentation and informatics supportive case team.

All the above core process owners headed by the facility medical director and the medical director is also responsible to the Woreda Health Management Higher Board Team.

The following Smart Art graphics design has been done to illustrate the above mentioned structural hierarchy of woreda 3 health center.

WOREDA 3 HEALTH CENTER STRUCTURE

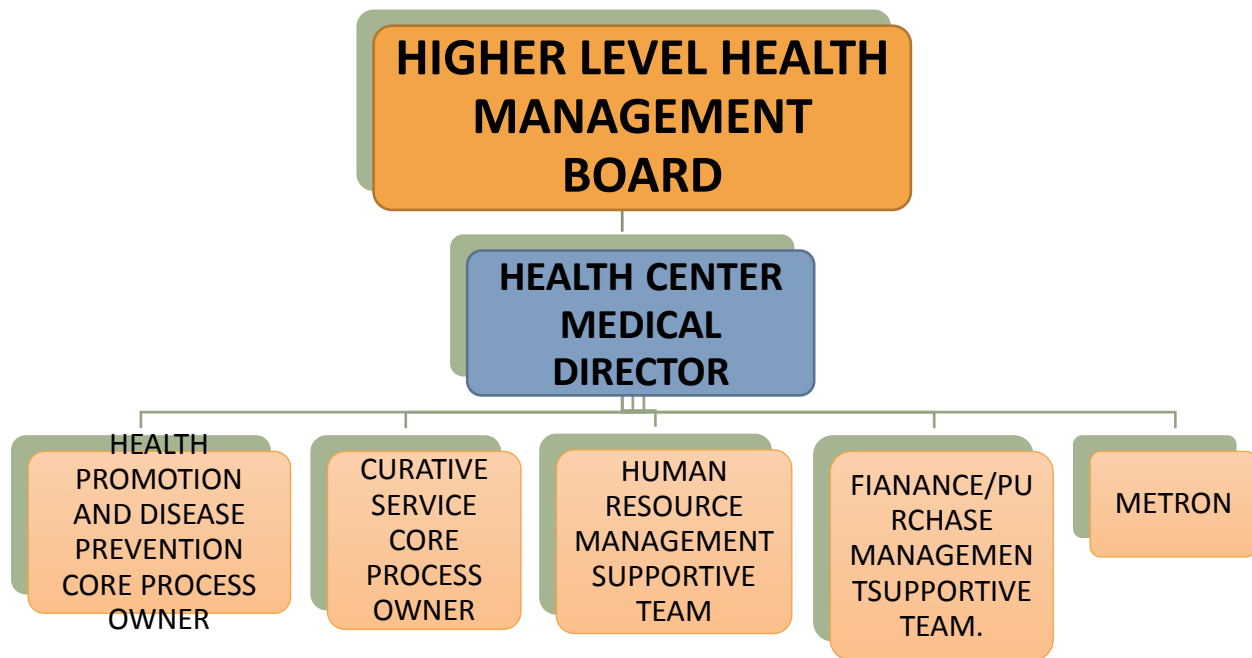


Figure 40. Organizational structure of woreda 3 health center of Addis K etema sub city, 2017.

In the woreda's health system there is a team which is called Rapid Response Team /RRT/ that works in substituting health management team at woreda level. The team is formed by comprising responsible persons from different case teams and departments of the health facility and the woreda health office.

Members of the RRT

- ❖ Disease Prevention and Health promotion...1 responsible person/focal
- ❖ Curative Service process owner....1 responsible person/focal
- ❖ Surveillance officer of the facility
- ❖ Pharmacy head
- ❖ Laboratory head
- ❖ In patient service... 1 responsible person
- ❖ Emergency room...1responsible person

- ❖ Head of the woreda 3 health office
- ❖ Responsible person from woreda health office core process owner
- ❖ Urban extension worker... 1 responsible person
- ❖ Infection prevention committee... 1 responsible person and
- ❖ Medical director of the facility

Number of Health Institutions

At present, 01 governmental and 06 private health institutions have been found in the administrative unit and being given their services at full capacity. In addition, two NGOs, namely AMREF Ethiopia and OXFAM have presented in the district and provided their support on health and health related issues. The table is presented to show the distribution of governmental and private health institutions in types & numbers and ratio of health facilities to population.

Table 22. Distribution of Health Institutions in woreda 3 Administrative unit, Addis Ketema sub city, 2017.

S. No	Types of health institution		Numbers		HF: Population Ratio	Remark
			Governmental	Private		
1	Hospital					
2	Health center		1	0	1: 19,311	
3	Pharmacy		0	1	1: 19,311	
4	Drug stores		0	2	1: 9655	
5	Diagnostic laboratory					
6	Clinics	Small/Primary	0	2	1: 9655	
		Medium	0	1	1: 19,311	
		Higher/Specialty				
Total			1	6		

The graph below is presented in support of the above tabular description and give better pictorial illustration about the type and number of health institutions in the district as a whole.

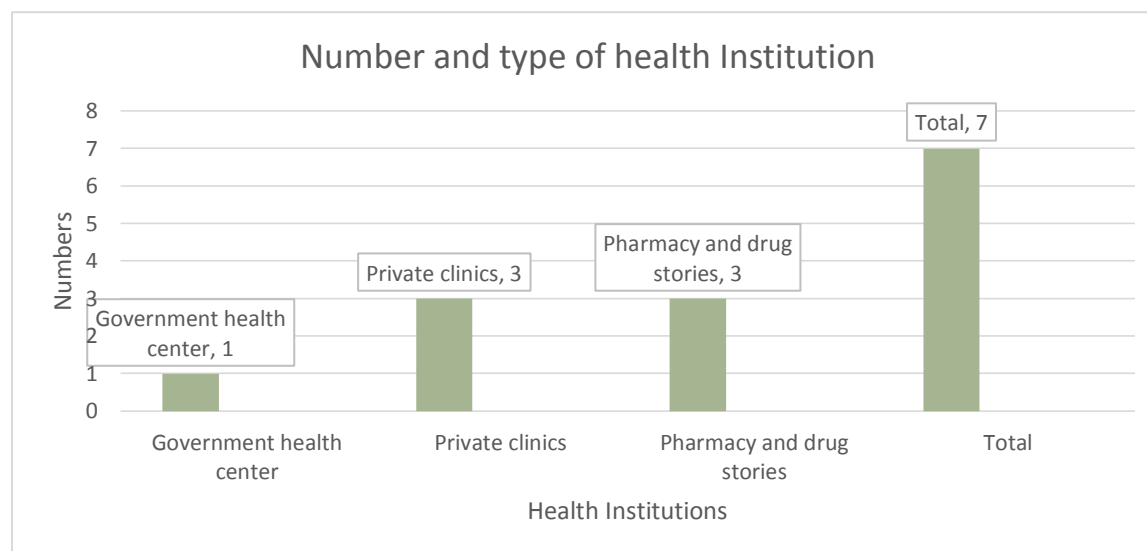


Figure 41. Distribution of Health Institution in woreda 3 Administrative unit, Addis Ketema sub city, 2017

Human Resources of Woreda 3 Health Center

Woreda 3 health center of Addis Ketema sub city that is organized under two main core process owners and three main supportive case teams has managed a total of 138 staffs. Of which 23 are employees of the woreda health office and the rest 115 are staffs of the health center. Those of the 115 aggregate health center's staffs also classified in to two groups and are namely 58 technical and 57 supportive staffs. They keep their due responsibilities in performing core integrated activities of the facility in order to serve a total of 19,311 residents of the district.

The table below is presented for clear illustration of the staff distribution of the health institute of woreda 3 health office and staff ratios calculation based on respective titles in comparison to the total population.

Table 23. Human Resources Distribution of woreda 3 Health Center & Health Office on the bases of sex and their ratios, Addis Ketema sub city, 2017.

S. No	Type of health personnel	Number		Total	Ratio of health personnel to population
		Male	Female		
1	Health officer	6	6	12	1: 1609
2	Laboratory technician	2	3	5	1: 3862
	Laboratory technologist	0	2	2	1: 9655
4	Pharmacy technician	2	2	4	1: 4828
	Pharmacist	1	2	3	1: 6437
6	Clinical nurse	5	14	19	1: 1016
	Professional nurse	5	6	11	1: 1755
7	Midwife	1	8	9	1: 2146
8	Environmental health	2	0	2	1: 9655
9	HEWS	0	11	11	1: 1755
10	Other health workers	1*	0	1	1: 19311
11	Supportive staffs	16	43	59	
Total		41	97	138	

*Applied biology

The graph below depicts woreda 3 health office human resource distribution by their professional titles in general for the year 2017.

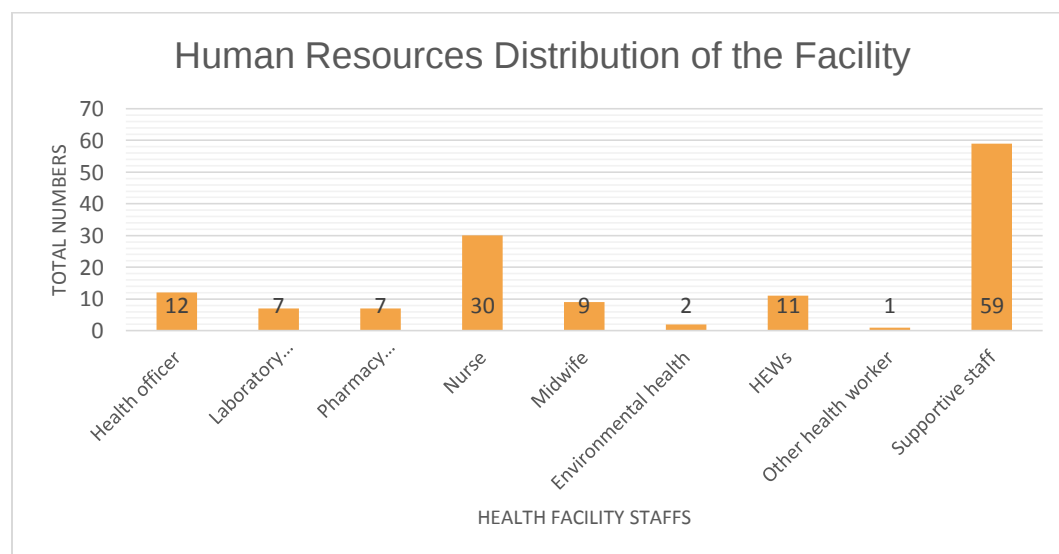


Figure 42. Human Resources Distribution of woreda 3 Health Center and health office as a whole of Addis Ketema sub city, 2017

Top Ten Leading Causes of OPD visits (or morbidity)

Based on the information obtained from woreda 3 health center of Addis Ketema sub city, the top ten leading causes of outpatient visit for the year 2014/15 and 2015/16 in the district are listed in tabular form in the following way.

Table 24. Top ten causes of OPD visits of woreda 3 health center of Addis Ketema sub city for the year 2014/15 & 2015/16.

S. No	Morbidity diseases (2014/15)	Sex		Total	Morbidity diseases (2015/16)	Sex		Total
		Male	Female			Male	Female	
1	AURTI	2313	2533	4846	AURTI	3176	4228	7404
2	AFI	714	1037	1751	Hypertension	825	1710	2535
3	Disease of MSS	486	1029	1515	Non-bloody diarrhea	1153	1345	2498
4	Diarrhea Non-bloody	686	804	1490	Typhoid fever	645	1117	1762
5	Dyspepsia	368	959	1327	Disease of MSS	539	1113	1652
6	Acute Bronchitis	573	573	1146	UTI	381	1253	1634
7	UTI	231	848	1079	AFI	590	911	1501
8	Helminthiasis	410	549	959	Skin Infection	583	801	1374
9	Disease of the Eye	323	523	846	Other parasitic disease	520	690	1210
10	Other parasitic disease	389	448	837	Helminthiasis	469	634	1103

As we observe from the table above AURTI, AFI & Disease of MSS were the top three morbidity cases for the year 2014/15 and AURTI, Hypertension & Non-bloody diarrhea were for the year 2015/16. The bar charts below are provided in support of the above table and give pictorial illustration.

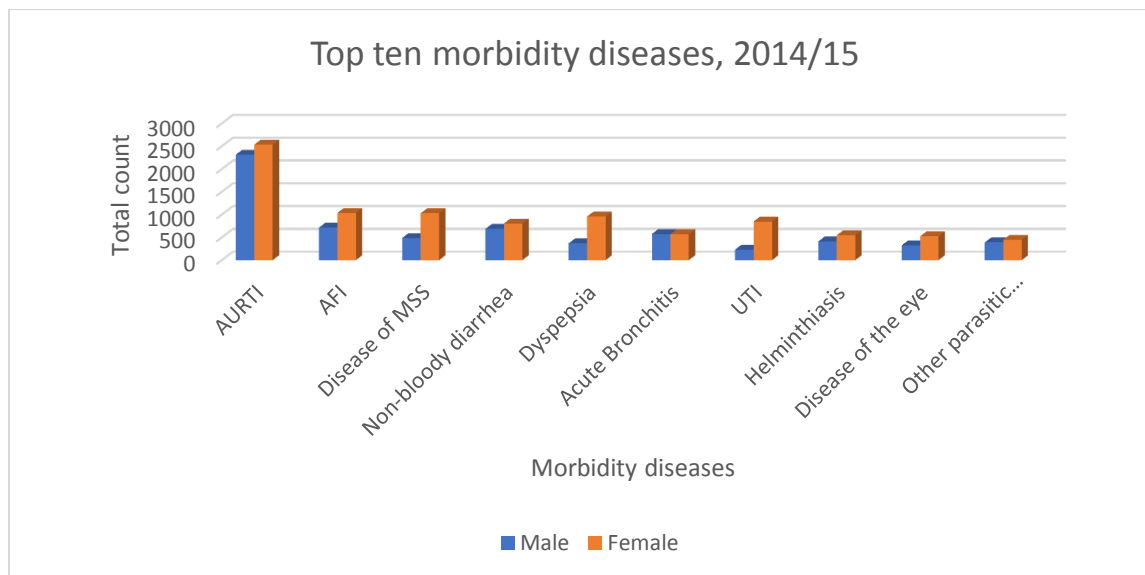


Figure 43. Top ten causes of OPD visits of woreda 3 health center of Addis Ketema sub city for the year 2014/15.

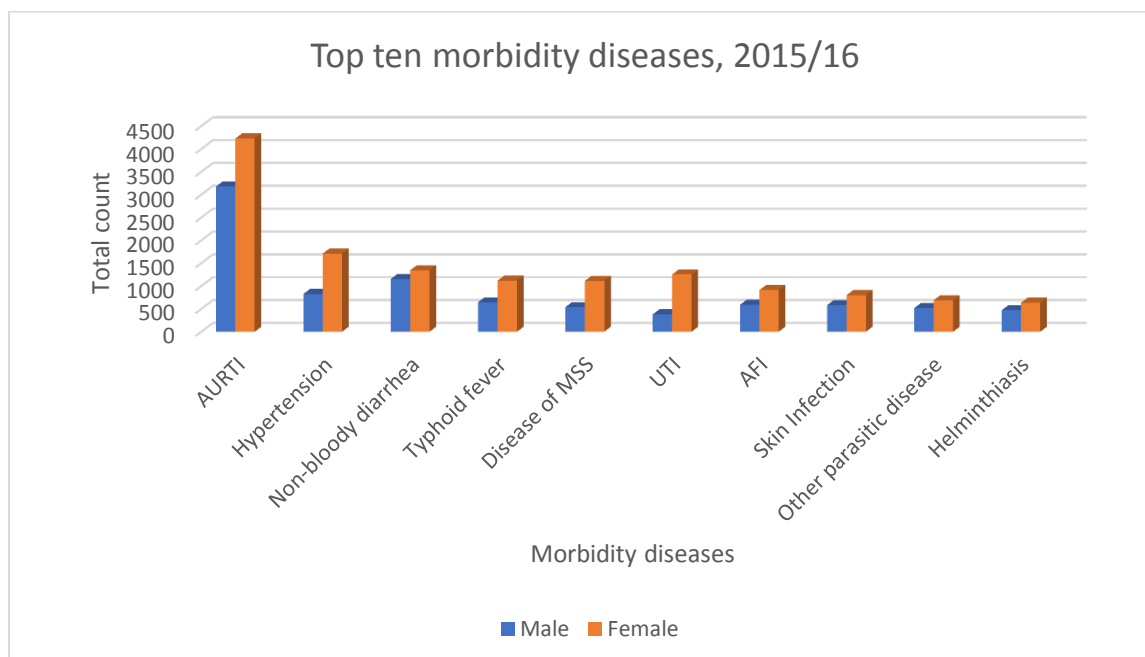


Figure 44. Top ten causes of OPD visits of woreda 3 health center of Addis Ketema sub city for the year 2015/16.

MCH Services

I. ANC, FP and Delivery Services

Proper care during pregnancy and delivery is important for both the mother and baby health. Antenatal care (ANC) with skilled provider and access to medical attention and hygienic conditions during delivery are some of those proper care during MCH service. These are important to follow pregnancy and reduce morbidity and mortality risk of the mother during pregnancy, delivery and postnatal period and as well the risk of complication and infection that may lead to death or serious illness for the mother, baby or both.

On this presentation we focused on some of the MCH service indicators like ANC first, ANC fourth, Total delivery, Delivery attended by skilled BA and TBA, PMTCT and PNC. In addition, we tried to see health care dimension of FP at woreda 3 health center of Addis Ketema sub city.

Table 25. Maternal Health Service in Addis Ketema sub city, Wereda 3 Health Center, 2015/16 to 2016/17.

S. No	Description	Coverage in numbers			Remark
		2014/15	2015/16	2016/17 (half year)	
1	ANC First	518	642	310	
2	ANC Fourth	348	434	199	
Delivery					
3	Total delivery	298	312	155	
4	Delivery attended by skilled health personnel	298	312	155	
5	Delivery attended by TBA	0	0	0	
6	PMTCT	16	3	0	
7	PNC	507	538	162	
Family planning					
8	Contraceptive short term	518	378	95	
9	Contraceptive long term	191	884	416	
10	Other methods	9	1	1	

II. Immunization (or EPI) Coverage

The Expanded Program of Immunization is one of the core activity in the child health service. At present the immunization program of our country included around nine vaccines preventable child hood diseases and giving the immunization service to all illegible children before their first birth days based the recommended schedules.

The following table illustrates the immunization activities of woreda 3 health center of Addis Ketema sub city for the year 2014/15 to 2016/17

Table 26. Immunization service in woreda 3 health center of Addis Ketema sub city, 2014/15 to 2016/17.

S. No	Description	Coverage			Remark
		2014/15	2015/16	2016/17 (Second Q.)	
1	BCG	488	543	235	
2	Measles	535	613	296	
3	OPV 1	578	657	287	
4	PENTA 1	594	654	287	
5	PENTA 3	565	624	314	
6	ROTA 1	594	656	287	
7	ROTA 2	561	609	295	
8	PCV 1	594	654	287	
9	PCV 3	565	626	314	
10	Fully vaccinated	535	613	296	
11	TT2+PW	848	748	440	
12	TT2+NPW	-	-	-	

Communicable Diseases

I. Tuberculosis and Leprosy

Indicators of TB and Leprosy include:

Tuberculosis (TB) case detection rate: number of new pulmonary and extra pulmonary (all forms) TB cases detected, among the TB cases estimated to occur countrywide.

TB treatment success rate: percentage a cohort of new smear positive TB cases registered in a specified period that successfully completed treatment. Successful completion entails clinical success with without bacteriological evidence of cure.

TB cure rate: percentage of a cohort of new smear-positive TB cases registered in a specified period that was cured as demonstrated by bacteriological evidence (a negative sputum smear result recorded during the last month of treatment and on at least on one previous occasion during treatment).

New cases of Leprosy: number of new cases of leprosy, both MB and PB, never treated before and registered during the specified period of time.

TB and Leprosy coverage of woreda 3 health center of Addis Ketema sub city for the year 2014/15, 2015/16 and 2016/17 of two quarters (Q1 & Q2) are indicated as follow in the table below.

Table 27. TB and Leprosy coverage in woreda 3 health center of Addis Ketema sub city, 2014/15 – 2016/17.

S. No	Description		Coverage in numbers										Remark
			2014/15				2015/16				2016/17		
			Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	
1	Prevalence of TB												
2	Pulmonary TB	Smear +ve	6	4	3	6	2	3	3	1	1	3	
		Smear -ve	6	6	11	3	2	3	6	4	4	4	
3	Extra PTB		11	9	8	7	3	6	11	2	5	4	
4	TB detected (All forms)		23	20	22	16	7	12	20	7	11	13	
5	TB treatment completed		23	25	28	16	12	13	14	9	5	9	
6	TB cured		3	8	6	5	2	3	2	4	2	3	
7	TB treatment success		26	33	34	21	14	16	16	13	7	12	
8	TB defaulter		0	1	0	1	0	1	1	2	0	0	
9	Death on TB treatment		5	1	3	2	1	0	2	1	0	0	
10	Total TB patient screened for HIV		M=46 & F=32				M=24 & F=18				M=13 & F=11		
11	Prevalence of Leprosy		1				0				0		

The line graph below is presented to show annual TB coverage on the bases of its indicators for year 2014/15 & 2015/16 and 2016/17 half year.

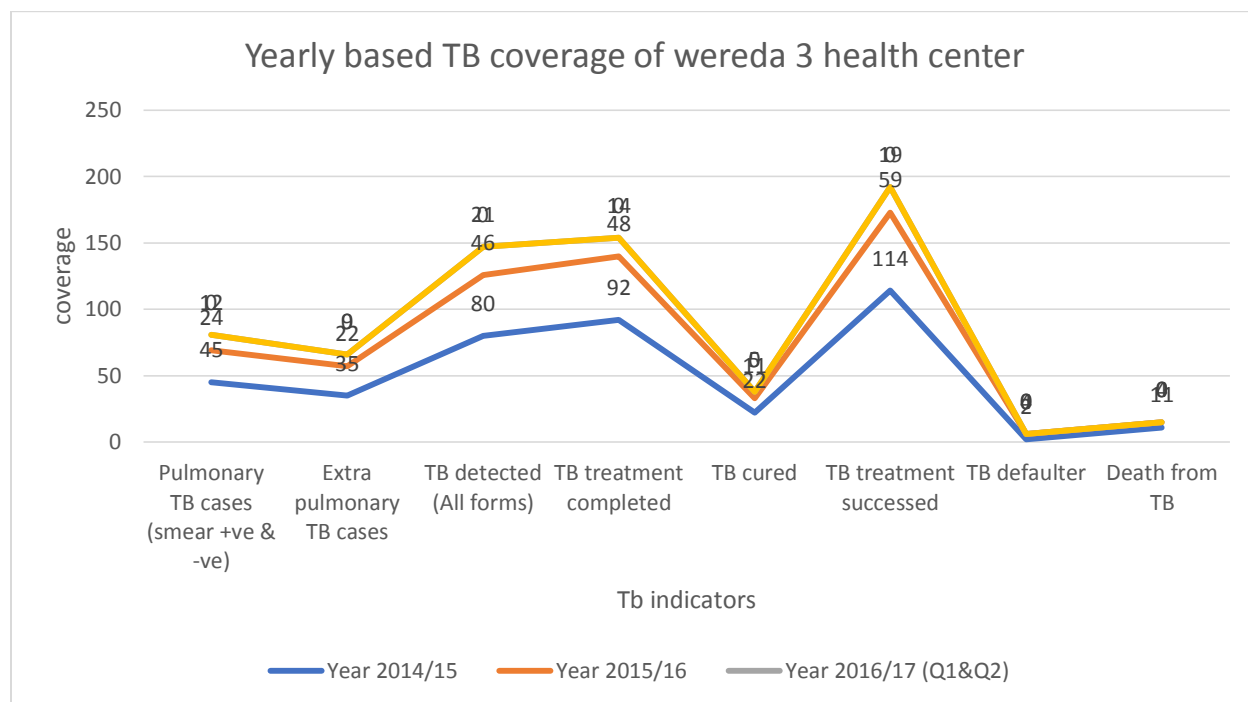


Figure 45. Yearly based TB coverage in woreda 3 health center of Addis Ketema sub city, 2014/15 to 2016/17

II. HIV/AIDS

HIV/AIDS is one of the deadly disease of the nation of the world and well prevailed in economically poor countries like Ethiopia. Its rate of prevalence is high in urban center as compared to rural area, since urban areas are the place where political and economic activities mainly occurred. Recent reports and assessments of our country indicated that there has been a marked increase in the number of health facilities and sites providing HCT, PMTCT and ART services and this made a great contribution to control HIV/AIDS transmission and distribution throughout the country.

Woreda 3 health center of Addis Ketema sub city is one of the facility in Addis that has been providing HCT, PMTCT and ART services to the community. The facility's HCT, PMTCT & ART service reports would have showed in tabular, pictorial graphs and charts forms based on the indicators' which is described in details below.

Indicators of HIV/ADIS includes:

1. VCT/HCT

- Total people who have been tested and received their result at VCT/HCT.
- Number of individual who have been received positive result at VCT/HCT.
- Total people screened for HIV/AIDS at PITC.
- Number of individual who have been received positive result at PITC.

2. PMTCT

- Number of pregnant women who are tested for HIV and know their result during pregnancy, labor & delivery and post-partum period.
- Number of HIV positive pregnant women who received ART during pregnancy, labor & delivery and post-partum period for the first time (put on Option B +).

3. HIV Care (Pre ART and ART)

Pre ART -Number of adult and children with HIV infection newly enrolled in care (Pre ART-care)

ART -Number of adult and children newly started on ART

- Number of adult and children with advanced HIV infection ever started on ART.
- Number of adult and children who are currently on ART.

Table 28. HIV/AIDS treatment and prevention status in Addis Ketema sub city, Woreda 3 Health Center, 2014/15.

S. No	Description of Activities		Coverage in numbers (2014/15)			Remark
			Male	Female	Total	
1	Total people screened for HIV		68	78	146	
2	VCT	People who have been tested and received their result at VCT/HCT.	45	46	91	
		No of Individual who have been received positive result at VCT/HCT.	1	3	4	
	PITC	No of People screened for HIV/AIDS at PITC.	23	32	55	
		No of Individual who have been received positive result at PITC.	5	5	10	
3	PMTCT	No of Pregnant women who are tested for HIV and know result during pregnancy, labor & delivery and post-partum period.		624	624	
		HIV +VE pregnant women received ART during pregnancy, labor & delivery and post-partum period for the first time (Option B +).		13	13	
4	HIV/ADIS chronic care	No of Adult and children with HIV infection newly enrolled in pre-ART care.	10	18	28	
		No of adult and children newly started on ART.	11	19	30	
		No of adult and children with advanced HIV infection ever started on ART.	27	51	78	
		No of adult and children who are currently on ART.	22	45	67	

Table 29. HIV/AIDS treatment and prevention status in Addis Ketema sub city, Woreda 3 Health Center, 2015/16.

S. No	Description of Activities		Coverage in numbers (2015/16)			Remark
			Male	Female	Total	
1	Total people screened for HIV		413	989	1402	
2	VCT	People who have been tested and received their result at VCT/HCT.	73	95	168	
		No of Individual who have been received positive result at VCT/HCT.	1	8	9	
	PITC	No of People screened for HIV/AIDS at PITC.	340	894	1234	
		No of Individual who have been received positive result at PITC.	3	10	13	
3	PMTCT	No of Pregnant women who are tested for HIV and know result during pregnancy, labor & delivery and post-partum period.		652	652	
		HIV +VE pregnant women received ART during pregnancy, labor & delivery and post-partum period for the first time (Option B +).		3	3	
4	HIV/ADIS chronic care	No of Adult and children with HIV infection newly enrolled in pre-ART care.	14	25	39	
		No of adult and children newly started on ART.	14	27	41	
		No of adult and children with advanced HIV infection ever started on ART.	44	74	118	
		No of adult and children who are currently on ART.	35	71	106	

Table 30. HIV/AIDS treatment and prevention status in Addis Ketema sub city, Woreda 3 Health Center, 2016/17 E.C (Q1 & Q2).

S. No	Description of Activities		Coverage in number (2016/17- Q1 & Q2)			Remark
			Male	Female	Total	
1	Total people screened for HIV		237	476	713	
2	VCT	People who have been tested and received their result at VCT/HCT.	48	100	148	
		No of Individual who have been received positive result at VCT/HCT.	3	5	8	
	PITC	No of People screened for HIV/AIDS at PITC.	189	376	565	
		No of Individual who have been received positive result at PITC.	6	1	7	
3	PMTCT	No of Pregnant women who are tested for HIV and know result during pregnancy, labor & delivery and post-partum period.		253	253	
		HIV +VE pregnant women received ART during pregnancy, labor & delivery and post-partum period for the first time (Option B +).		0	0	
4	HIV/ADIS chronic care	No of Adult and children with HIV infection newly enrolled in pre-ART care.	4	4	8	
		No of adult and children newly started on ART.	4	10	14	
		No of adult and children with advanced HIV infection ever started on ART.	44	74	139	
		No of adult and children who are currently on ART.	39	92	131	

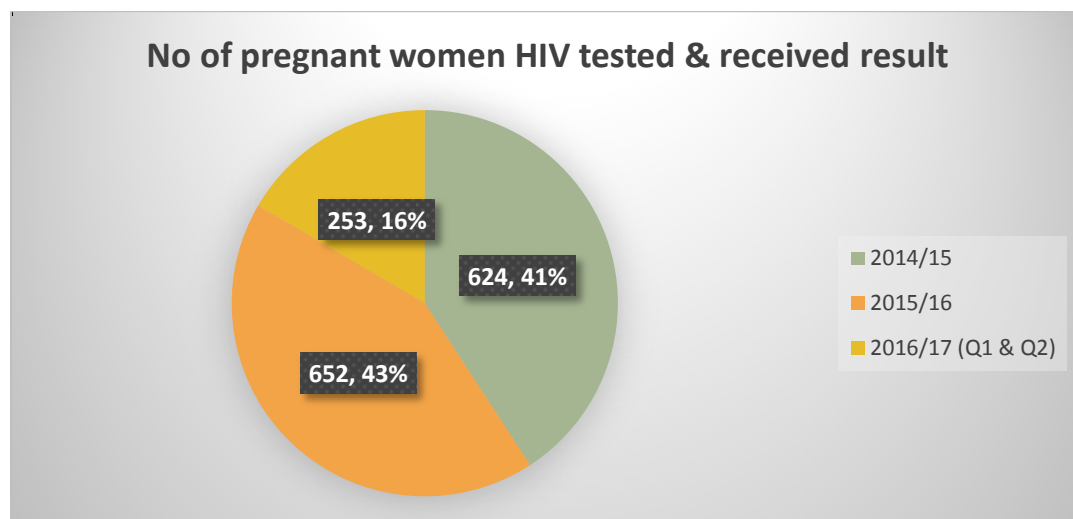


Figure 46. Number of pregnant women screened for HIV in PMTCT service at woreda 3 health center of Addis Ketema sub city, 2014/15-2016/17

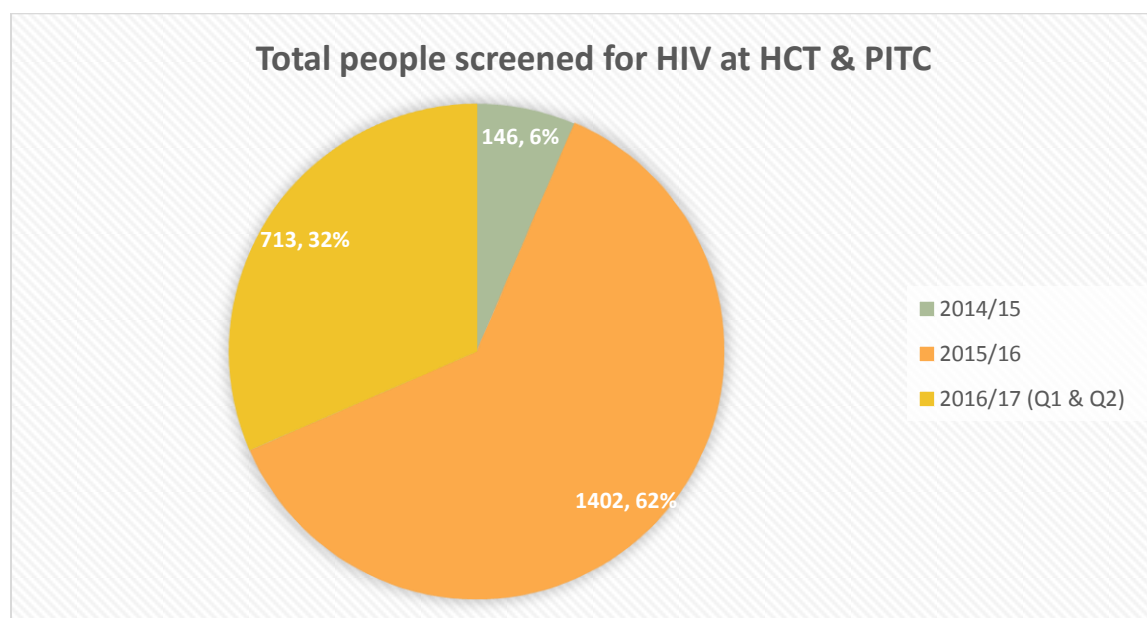


Figure 47. Total people screened for HIV at HCT & PITC at woreda 3 health center of Addis Ketema sub city, 20014/15-2016/17

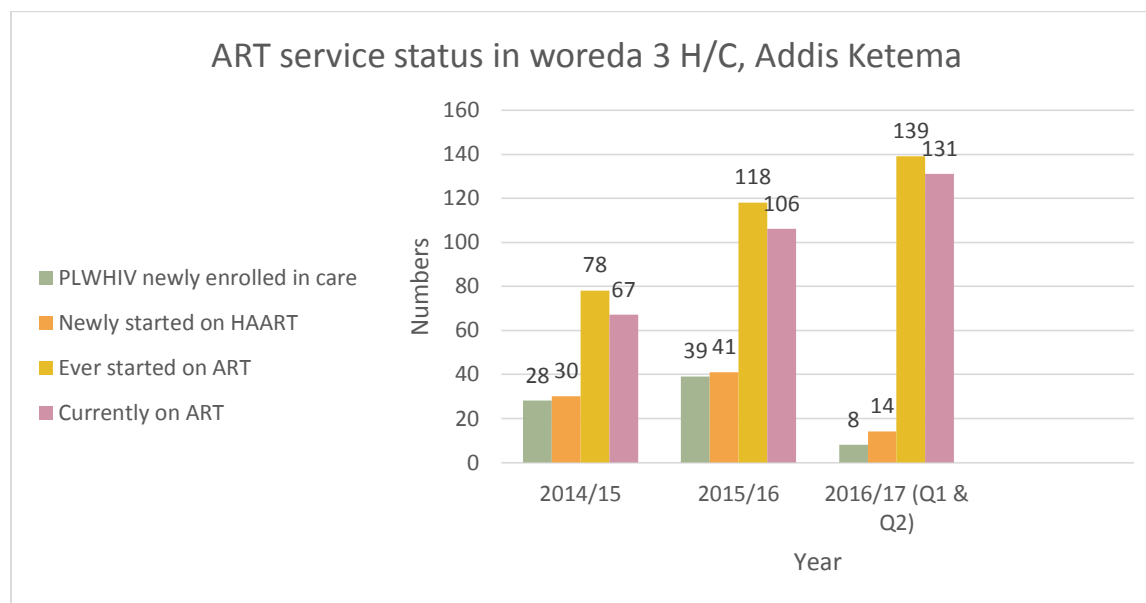


Figure 48. ART service status of woreda 3 health center of Addis Ketema sub city for the year 2014/15, 2015/16 & 2016/17.

Discussion

Woreda 3 Administrative unit of Addis Ketema Sub City is one of the less densely populated district of the sub city with an average of 326.16 resident per hectare as compared to others woreda's population densities that are found within the sub city, that means 463.06 resident per hectare for woreda 1 & 415.75 resident per hectare for woreda 2.

For the academic year of 2016/17, 6 governmental and 12 private ownership educational facilities are in operation in the surrounding area of woreda 3 and are going to be educating a total of 6,450 students at different levels of education. Of which 53% are females and 47% are males. This indicated that there is a slight gender gap domination by female's students.

Regarding the health service situation, here discussed in detailed based on the different indicators that showed health service coverage status in better way. According to the profile that is developed for woreda 3 administrative unit of the sub city, the health center of woreda 3 currently providing both preventive and curative service for the total of 19,311 people who are living there. According the country's new health policy one health center is designed to serve 25,000 populations and this implies that the facility is giving its service with in the standard.

The profile document of the district also reported a total of 718 & 1,263 new and repeat accepters of modern contraceptives for the year 2014/15 & 2015/16 respectively and women aged 15-49 of the district for those respective periods were 11,295 & 11,315. Based on these data that are estimated and figure out the contraceptive acceptance rate of the health center as 6.4% & 11.16% for those periods. They were lower than the regional contraceptive acceptance rate of 22.2% for the year 2005 EFY. (Health and health indicators, 2005 EFY)

EDHS 2016 survey study discussed that urban women were more likely than rural women to have received ANC, Delivery & PNC services from skilled providers and it indicates that 90 % of urban women received ANC service from skilled providers and 63 % of the urban women to have had four or more ANC services and 82 % Addis Ababa's women whose last birth was protected from tetanus toxoid. Accordingly, the recent document of profile described on these regards as 80.25% women are delivering ANC first service from skilled provider for the year 2015/16 and 54.25 % women are getting ANC four services from skilled providers for the above same fiscal year. This suggested of the facility's ANC service coverage have not been gone in line with regional estimated value & it has been lowered

The survey of 2016 EDHS also described that birth of Addis Ababa's mothers which were assisted by a skilled provider and were delivered in a health facility reached 97% of each. And 17% of women reported having received a PNC check up in the first 2 days after birth. In similar way the profile shows that delivery attended by skilled health personnel for the year 2015/16 being equal to 48.75% and the PNC checkup coverage for the 2015/16 was 84.06% which was by far more than from the regional estimate.

Based on FMOH Health and Health Indicators, 2005 EFY Report, Addis Ababa city administration immunization coverage by antigen for penta 3, pcv 3, measles & fully immunization for the year 2005 EFY were 88.8%, 52.9%, 89.5% & 86.9% respectively. Woreda 3 health center of Addis Ketema sub city EPI coverage on this regard for the year 2008 EFY indicated that 86.3% for penta 3, 86.6% for pcv 3 and 84.8% for measles & fully immunization coverage. This shows that EPI coverage of the district has not been as such far from that of the regional coverage but it needs improvement.

As of 2004 E.C Annual Report of Addis Ababa City Administration of Health, AURTI was the Most frequently occurring cause of morbidity among the ten top diseases of the city. It was 233,334 in absolute figure for year 2004. Unspecified diseases of the eye & pneumonia was

taking the second and the third positions with a total number of 100,067 & 69,560 respectively. The profile report of the district also showed that AURTI was the first morbidity disease of the woreda for the year 2015/16 with a total number of 7,404 and hypertension & non-bloody diarrhea took the second & the third ranks for that same period.

The document which is prepared by FMOH as Health and Health Indicators, 2005 EFY also indicated that TB case detection rate, TB treatment success rate & TB cure rate for the year 2005 at national level have been reached to 58.9%, 91% and 70% respectively, whereas the health profile document of woreda 3 showed that TB case detection rate of 72% for period 2015/16 in the district and TB treatment success rate & TB cure rate were 71% & 50% for this same period. This indicated that the TB detection rate, TB treatment success rate & TB cure rate for the year 2015/16 by far lower than from the regional estimated value for the year 2005 EFY.

Regarding HIV/AIDS, the profile document described that there only 231 PLWHIV clients are accessed for chronic HIV care in the facility ART clinics within its 4 years' service experiences of ART. In other words, the profile showed that a total of 231 clients are registered and getting chronic care services in aggregate and 128 clients were registered as ever started and 119 clients were as currently on ART. This is a very low coverage when compared to with other health facilities that are found in the sub city and has ART services.

According to the health facility HMIS 2015/16 aggregate report, a total of 168 peoples are screened for HIV/AIDS in the HCT services for the year 2015/16 and 2016/17 of the individuals who have been received positive results that is 5.3% of the total clients who are getting the HCT services in the facility. And a total of 652 pregnant women are tested for HIV/AIDS and only 3 of the pregnant women are getting HIV positive results, which was 0.46% of the total pregnant women who are getting the PMTCT services for the year 2015/16. These indicate that the HIV positivity detection rate in HCT service by far better than the national estimate which was 1.1% whereas the positive detection rate of PMTCT service still lower than that of the national estimates for the year 2005 EFY which was 0.7% for PMTCT.

Challenge and Limitation

In the preparation this health profile documentation for woreda 3 of Addis Ketema sub city, the great challenge that encountered was the data collection process. It was very difficult to obtain most of population profile data at woreda level and also so hard in accessing written literatures that addressed woreda's problems.

Most of the data like topography & climate situation, communication & utilities, socio-economic conditions, water supply & environmental sanitation have been forced to incorporate in the document considering the sub city and sometimes the regional situation. Data regarding vital statistics; for instance, IMR, CMR, MMR, CBR & CDR could not include in the profile because this kind information almost nil at woreda and even at sub city level.

Moreover, there was a problem in data timeliness & completeness and difficulty to find out detailed information about the Woreda Disaster situation.

Conclusion

In the process of providing the health profile document for the district in the first place we recognized that very limited numbers of studies have been conducted or literatures have been written in addressing Addis Ababa city administration woreda's problems; Some Sector Bureaus, Offices, Agencies & Authorities which are operational at woreda level have not accessed information regarding the working woreda situation but with the way, we known that woreda 3 health center of Addis Ketema sub city preventive & curative services goes within the standard of the country's new health policy.

When analyzing the overall service status of the health center, some core activities of the facility for instance PITC, VCT & PMTCT etc. have been lacking consistence in performance or coverage; PMTCT's service positive result percentage lower than the national estimate level & HCT and PITC services positive result percentage by far better than the national estimate values.

Regarding the facility's ANC, Delivery & PNC services, we concluded that ANC service coverage that means ANC first & fourth status and delivery services status have been lower than regional coverage estimate levels and PNC coverage by far higher than the regional estimate.

Contraceptive acceptance rate of the health center also by far lower as compared to the regional estimated value.

The other things which could clearly understand from the profile documentation is that the EPI coverage of the district has gone in line with the regional coverage status even though that requires some improvement for the future and AURTI has been continuing the first leading morbidity disease of the district from total cases and the top ten leading cause of OPD visit for adult & under five children have not been done separately.

Finally, we observed that ART clinics of woreda 3 health center of Addis Ketema sub city has a challenge in enrolling PLWHIV clients in the chronic care services as expected and TB case detection rate, TB treatment success rate & TB cure rate by far lower than the regional estimate.

Recommendation

In order to alleviate most problems of the country's conducting research at the grass root level is a first thing. Governmental & nongovernmental organizations, concerned stakeholders', research & study institutes of the country have to initiated researchers to conduct their studies making down at the woreda levels.

The other things which we clearly observed in the preparation of profile document for the administrative unit of woreda; some sector bureaus, offices, agencies & authorities functional in the administrative unit do not have information at all about the working woreda current situation. Thus, the service giving servants of the above-mentioned sector bureaus, offices, agencies & authorities have responsibilities of knowing information about the current woreda situation which has a direct association with the working environment and the employing sectors also take responsibility for these.

The third things that need improvement is that the facility's ANC, Delivery, PNC & EPI coverage status. ANC & Delivery service coverage status are good but have in lower coverage state when compared to the regional condition and PNC service has by far higher coverage condition as compared to the regional level and this may be a result of double reporting. Thus,

the above core activities of the facility have to be corrected and improved with the facility's staffs' initiation and continuous support of the sub city & regional health bureaus mentored team. Finally, we could have recognized that the core activities of the health center and some of the indicators of service coverage status those activities have challenges and lack consistency in their yearly trends.

For instances HCT, PITC & PMTCT services of the facility have challenges in keeping consistencies' in their coverages status trends and ART chronic care clinics of the health center has a big problem in accessing enough clients for its proper functioning. Therefore, the health center head of the core process owner in collaboration with the sub city health office authoritative bodies has responsibility in knowing the root causes and as well doing for the improvements and also TB & HIV /AIDS service status are under a great challenge in meeting coverage status in accordance with the regional coverage status. That means TB detection rate, TB treatment success rate, TB cure rate, PMTCT service positive result detection percentages have been lower than the regional coverage status. Thus, they needed strong staffs' initiation and continuous supervision's & follow up of the sub city & regional health bureau supporting teams.

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Chapter V- Scientific Manuscripts for Peer Reviewed Journal

5.1 Bacillary Dysentery surveillance data analysis, Addis Ketema Sub city, Addis Ababa, Ethiopia -November, 2017.

Abstract

Authors: Afework Melesse¹, A. Worku², M. Gizaw³

Affiliations: ¹Ethiopia Field Epidemiology Training Program;

²Addis Ababa Regional Health Bureau;

³Addis Ababa University, School of Public Health;

Author contacts: Email: Afaemelese2017@gmail.com Cell phone: +251-913-727860

Background: In Ethiopia, and other developing countries foods borne diseases including Bacillary dysentery is considered as one of the public health problem. This disease can easily abrupt and may change in to epidemic. A well-established public health surveillance system is mandatory to track the disease status, describe dysentery cases by time and place and compare it with the current status of the sub city.

Methods: The data was reviewed and collected from different documented data sources and also by directly asking information from concerned body. It was both the regional and sub city PHEM offices were the sources for this secondary data. Descriptive retrospective study was conducted. MS Word and MS Excel were mainly used to organize, analyze and interpret those data and tables, graphs, phrases and short statements were served for further description.

Results: A three-year surveillance data analysis of dysentery cases in Addis Ketema sub city; 2013-2015 indicated that a total of 2,265 cases in year 2013, 1,623 cases in year 2014 and 2,201 cases in year 2015 were have been observed. The dysentery cases proportion/1000 population were 8, 5.6 and 7.4 for year 2013, 2014 and 2015 respectively and death and case fatality rate were zero for those years. Being slum area, overcrowded situation, low socioeconomic status, shortage of latrine, poor sewerage system and population movement are some of the factors that lead communities to epidemic peaks of bacillary dysentery cases.

Conclusion: The surveillance data analysis of the sub city indicated that there is burden in dysentery cases and the typical characteristics of the sub city geographic area which is characterized by being slum area, overcrowded, low socio-economic status, shortage of latrine and poor sewerage system by itself are the main contributing factors this burden. Therefore, strengthening the public health surveillance system and working on the main contributing factors of the disease burden are an important step.

Key words: Bacillary Dysentery, Surveillance Data Analysis, Ethiopia

Background

Bacillary dysentery is an acute bacterial infection involving the large and distal small intestine and is characterized by small-volume, loose blood and mucus contained stools and are associated with fever, nausea, vomiting, abdominal cramps and rectal pain. It is commonly caused by 4 species of shigella, gram-negative rod-shaped bacteria and named as: *Shigella dysenteriae*, *S. flexneri*, *S. boydii*, and *S. sonnei*. (1,2) Since as few as 10 organisms can cause infection, shigellosis is easily transmitted and can be acquired during short-term travel. Transmission occurs via the fecal-oral route, through direct person-to-person contact, or indirectly through contaminated food, water, or fomites. Only humans and higher primates carry *Shigella*. (4,5) *S. sonnei* infection is usually transmitted through interpersonal contact, particularly among young children and their caregivers. Outbreaks have also been traced to contaminated drinking water, swimming in contaminated water, and sexual contact between men. (4) A large-scale outbreak of dysentery is a particular threat to public health. The death rate can be as high as 15 per cent. Even when correctly treated, about 5 per cent of people with dysentery can die during an epidemic. (3)

Worldwide, *Shigella* is estimated to cause 80–165 million cases of disease and 600,000 deaths annually. *Shigella* spp. are endemic in temperate and tropical climates. (4)

Shigellosis is predominantly caused by *S. sonnei* in industrialized countries, whereas *S. flexneri* prevails in the developing world. Infections caused by *S. boydii* and *S. dysenteriae* are less common globally but can make up a substantial proportion of *Shigella* spp. isolated in sub-Saharan Africa and South Asia. (4,5)

In Ethiopia, and other developing countries information on bacillary dysentery cases are lacking and Communities usually live in overcrowded situations. Population movement, overcrowding, poor access to health, food shortages, lack of safe water, poor sanitation and poor hygiene are some of the risk factors for the increase burden for these cases and are also are the typical features of those countries. (6) Addis ketema sub-city, one of the ten sub cities of Addis Ababa, is also characterized by all of the above listed features. Because of these features, the disease like bacillary dysentery can easily abrupt and may change in to epidemic unless a timely appropriate action taken with the help of Public health surveillance system. Therefore, the kind of

surveillance system data analysis of bacillary dysentery cases is essential to track the disease status, describe dysentery cases by time and place and compare it with the current status of the sub city.

Materials and Methods

Descriptive epidemiology

Addis ketema sub city which is our study area is one of the ten sub cities of Addis Ababa. It is located in the Northwest area of the city and borders with the sub city of Gullele in the North, Arada in the East, Lideta in the South and Kolfe-Keranio in the West. According to 2007E.C. Population and Housing Census Report the sub city has a total of 255,092 populations, from which 52% were have been females and the rest are males.

For this system analysis, Aggregated data of bacillary dysentery cases of Addis Ketema sub city PHEM weekly surveillance report and the stored data base report of AAHB were used as source data and all required data were collected, analyzed and interpreted from January 15 to March 09, 2017. Retrospective Descriptive study was conducted, hard and soft copy of documented data were reviewed. We defined a suspected case as a person with diarrhea with visible blood in the stool and Suspected case with stool culture positive for shigella dysenteriae 1 as a confirmed case.

In order to compile, organize and analyze the collected data, MS Word 2016 and MS Excel 2016 were employed. Furthermore, tables, graphs and descriptive phrases or statements used to make the analysis sounder. For ethical clearance an official letter was obtained from AAU SPH and then submitted to Addis Ketema sub city Health Office. The purpose of the study was so explained to the sub city officials and verbal consent is obtained to go through the study. Confidentiality was kept throughout the process.

Results

Descriptive Epidemiology

Table 31. Bacillary dysentery cases report per month for the year 2013-2015 in Addis Ketema sub city.

Sub city (place)	Months of the year	Total number of cases		
		2013	2014	2015
Addis Ketema	January	178	244	154
Addis Ketema	February	173	143	-
Addis Ketema	March	234	175	77
Addis Ketema	April	193	102	97
Addis Ketema	May	284	177	99
Addis Ketema	June	183	157	214
Addis Ketema	July	239	212	235
Addis Ketema	August	156	45	168
Addis Ketema	September	146	159	178
Addis Ketema	October	198	56	392
Addis Ketema	November	134	58	312
Addis Ketema	December	147	95	275
Total		2265	1623	2201

The above table is a summary report of bacillary dysentery cases Addis Ketema sub city for the past three consecutive years; 2013, 2014 and 2015. As we clearly observed from the table, year 2013 was the period where maximum number of cases were seen (2,265 cases) as comparison to the years 2014 (1,623 cases) and 2015 (2,201 cases).

Table 32. Dysentery cases proportion, death and CFR for the year 2013 to 2015.

Year	Population	Cases	Proportion/1000	Death	CFR
2013	283,089	2265	8	0	0
2014	290,348	1623	5.6	0	0
2015	297,793	2201	7.4	0	0

The above table also showed that a simple description of bacillary dysentery cases proportion, death and case fatality rate for the year 2013, 2014 and 2015 in Addis Ketema sub city.

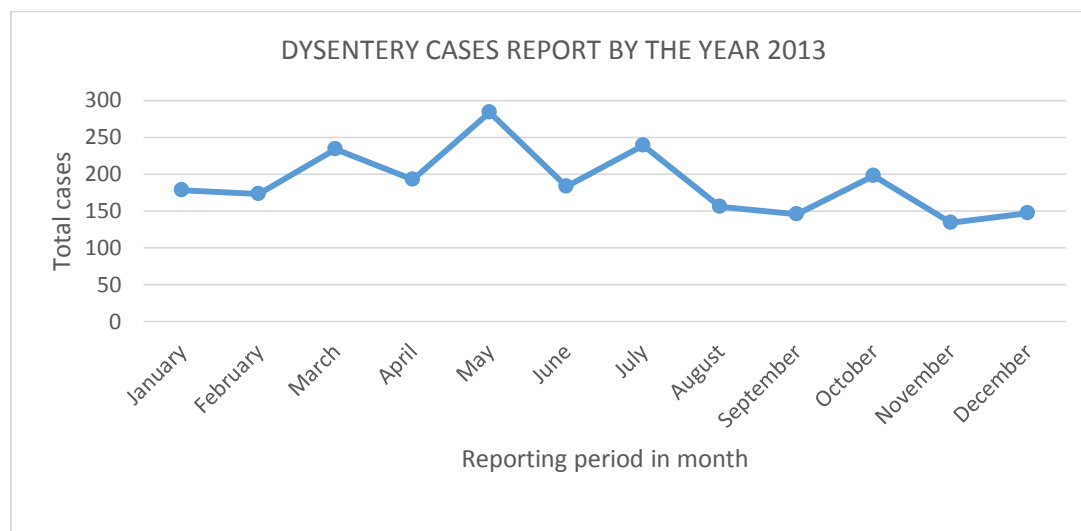


Figure 49. Dysentery case annual report of Addis Ketema sub city, Addis Ababa, Ethiopia-2013

Data source: Addis Ababa Regional Health Bureau.

In the line graph above, we tried to see the trend of dysentery cases in each month for the year 2013 G.C. In that fiscal year a total of 2265 dysentery cases were seen in all health facilities of the sub city and the highest number of cases seen in the month of May, 2013 G.C. (284 cases, 12.5%) and the least cases were seen in the month of November, 2013 G.C (134, 5.9%).

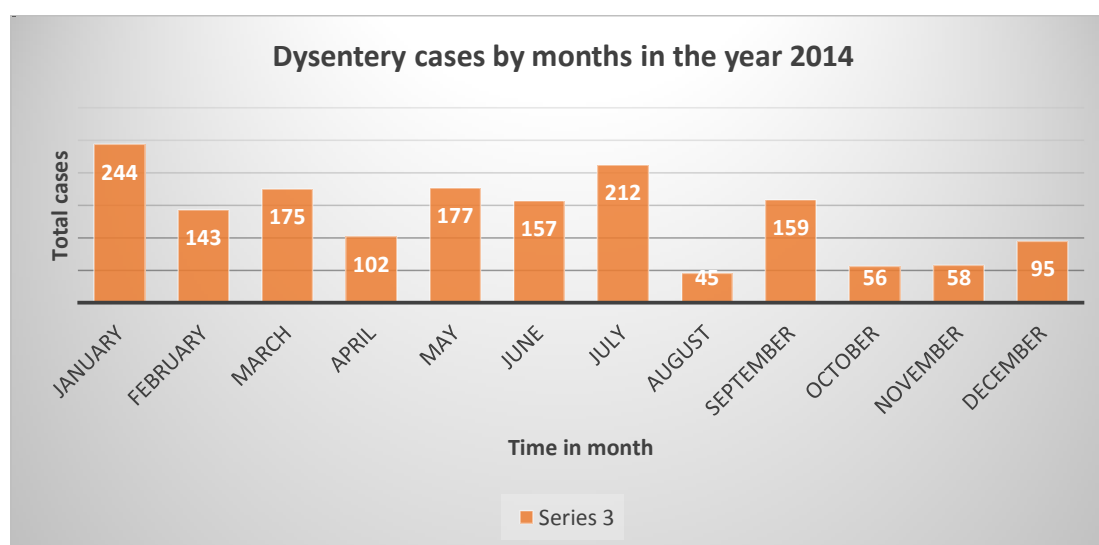


Figure 50. Dysentery reports of Addis Ketema sub city, Addis Ababa, Ethiopia-2014.

Data source: Addis Ababa Regional Health Bureau.

The bar chart observed above described dysentery cases monthly base trend for the year 2014 G.C. During that fiscal year the lowest cases of dysentery seen (1,623 cases) as we compared to years 2013 and 2015. From those treated cases (244 cases, 15.03%) were seen in the month of January, 2014 (the highest cases). The month of August for the year 2014 was the least cases of patients were seen (45 cases, 2.8%).

The graph below depicts the trend of dysentery report for the year 2015 on monthly bases. The month of October for the year 2015 indicated the highest report (392 cases). The lowest dysentery cases were reported in the months of February (No reported case) and March (77 cases) of the same year.

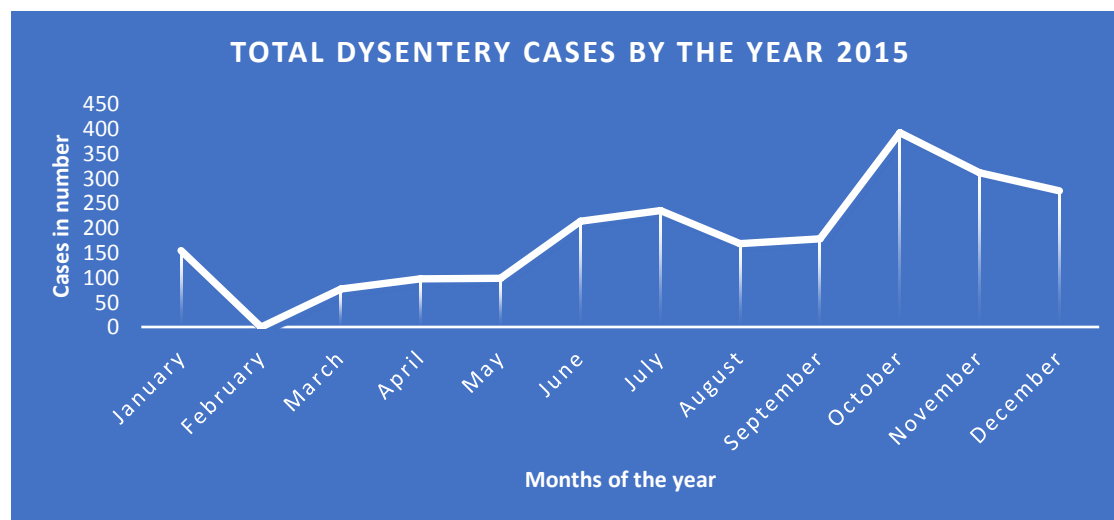


Figure 51. Dysentery reports of Addis Ketema sub city, Addis Ababa, Ethiopia-2015

Data source: Addis Ababa Regional Health Bureau.

Discussion

Bacillary dysentery may occur as epidemic and could put in danger the community's life in developing countries like Ethiopia in which the communities live under the condition of overcrowding, poor hygiene and sanitation and large population movement. It is now becoming a major public health problem. The epidemics of dysentery cases can only be detected early if a system for the disease surveillance has been established and responding it immediately. When we go through surveillance system analysis, we could not get any documented data that indicate a report of dysentery epidemics in Addis Ketema sub city.

Dysentery cases proportions/1000 populations [8 for year 2013, 5.6 for year 2014 and 7.4 for year 2015] and case fatality rates [zero] are not showed a significant improvement as we compared to the figures that are observed with the shigellosis surveillance cases reported on 2006 to 2008 E.C by Addis Ababa Regional Health Bureau, it was 204 cases per 100 000 populations, the study which was made by Fesehaye Alemseged at Jimma university indicated that there was an outbreak in Jimma city in the month December 2008 E.C, prevalence was 64.5 and the other study which was done in AAU Technology faculty on shigellosis outbreak from March to April 2010 by four researchers namely Mer'awi Aragaw, Tilahun Tafese, Zayed Beyene and Adamu Addissie. The study showed that its prevalence was 40 and attack rate 6.8.

The typical characteristics of Addis Ketema sub city that are being slum area, overcrowded situation, low socioeconomic status, shortage of latrine, poor sewerage system could raise as a first reason for the insignificant improvement of dysentery cases proportions. Community's awareness regarding the disease, health facilities poor recording and reporting system, health professional missing the cases and laboratory error may come up as the other reasons for this indifference.

Population movement, insufficient hygienic and sanitary condition, overcrowding and low socio-economic status leading to epidemic peaks of bacillary dysentery cases.

Difficulty in availing a five-year surveillance data from Addis Ketema sub city's data base system and the lack of an important socio demographic variables like age and sex are the two challenges in this study.

Conclusion

Through the three years surveillance data analysis we raise following points as conclusion. The burden in one of the weekly reportable diseases, bacillary dysentery cases in Addis Ketema sub city is not changed as needed and the typical characteristics of the sub city geographic area which is characterized by being slum area, overcrowded, low socio-economic status, shortage of latrine and poor sewerage system by itself are the main contributing factors for not achieving the expected change in disease burden. The PHEM office of the sub city is not well equipped with surveillance data documents and it shows a greater discrepancy as we compared to the regional PHEM office surveillance data document. The weekly disease reportable format which is used to

collect and compile surveillance data lacks the important socio demographic data like age and sex. On the basis of the above listed points, we forewarned the recommendation as follow. The annual dysentery cases surveillance data reports of the sub city health facilities are not in improving mood and thus the reasons behind should have to be assessed by the sub city PHEM office. Some of the major contributing factors for the dysentery cases burden like being slum area, overcrowding, low socio-economic status, etc. require improvement. This could be done by the regional authoritative body in collaboration with different NGOs. The PHEM office of the sub city is going to be made his best effort in alleviating the problem in surveillance data gap and the socio demographic variables that are not included in weekly reportable format should be taken in to consideration. This would be the responsibility of PHEM regional office.

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Chapter VI- Abstract for Scientific Presentation

6.1 Bacillary Dysentery Case Surveillance Data Analysis in Addis Ketema sub city, Addis Ababa, Ethiopia, 2017.

Abstract

Afework Melesse¹, A. Worku², M. Gizaw³

1. Ethiopia Field Epidemiology Training Program
2. Addis Ababa Regional Health Bureau
3. Addis Ababa University, School of Public Health

Background: In Ethiopia, and other developing countries foods borne diseases including Bacillary dysentery is considered as one of the public health problem. This disease can easily abrupt and may change in to epidemic. A well-established public health surveillance system is mandatory to track the disease status, describe dysentery cases by time and place and compare it with the current status of the sub city.

Methods: The data was reviewed and collected from different documented data sources and also by directly asking information from concerned body. It was both the regional and sub city PHEM offices were the sources for this secondary data. Descriptive retrospective study was conducted. MS Word and MS Excel were mainly used to organize, analyze and interpret those data and tables, graphs, phrases and short statements were served for further description.

Results: A three-year surveillance data analysis of dysentery cases in Addis Ketema sub city; 2013-2015 indicated that a total of 2,265 cases in year 2013, 1,623 cases in year 2014 and 2,201 cases in year 2015 were have been observed. The dysentery cases proportion/1000 population were 8, 5.6 and 7.4 for year 2013, 2014 and 2015 respectively and death and case fatality rate were zero for those years. Being slum area, overcrowded situation, low socioeconomic status, shortage of latrine, poor sewerage system and population movement are some of the factors that lead communities to epidemic peaks of bacillary dysentery cases.

Conclusion: The surveillance data analysis of the sub city indicated that there is burden in dysentery cases and the typical characteristics of the sub city geographic area which is characterized by being slum area, overcrowded, low socio-economic status, shortage of latrine and poor sewerage system by itself are the main contributing factors this burden. Therefore, strengthening the public health surveillance system and working on the main contributing factors of the disease burden are an important step.

Key words: Bacillary Dysentery, Surveillance Data Analysis, Ethiopia

Chapter VII- Narrative Summary of Disaster Situation Visited

7.1 Meher Seasonal Emergency Need Assessment Report for Health and Nutrition in Tigray Region, Ethiopia, 2017.

Executive Summary

Introduction: This Meher Rapid Emergency Needs Assessment was conducted in Tigray Region starting from 21 Nov. to 8 Dec. 2017. In this assessment a total of 5 *zones* and 16 *woredas* were visited with a criterion that the current draught attacks the area by how much extent. The health and nutrition emergency assessment part has undergone the assessment with the objective of identifying the extent, type, magnitude, severity and likely of the health and nutrition hazards and identifying the most vulnerable populations for health and nutrition problems in Tigray region.

Methods: The different methodologies that we were gone applied in this assessment were collect data on key indicators that have impacts on human health and nutrition by using updated structured questionnaires and conduct meeting, discussions and undertake interview with regional and *woreda* health officials and community leaders at *kebele* level and review existing relevant documents based on the agreed tools.

Result: The current estimated population of the visited 16 Woredas which are found in 5 selected zones of Tigray Region is reached 2,524,766 (1,284,931 male and 1,331, 817 female). Regarding to health, the assessment indicated that there is multi-sectoral PHEM coordination forum in the entire assessed woredas, an outbreak of AWD and Malaria cases buildup were recorded nearly in all *woredas*. The nutritional assessment also showed that, the screening coverage of 6-59 months children was 80% in the assessed all *woredas* from May-Oct. 2017. SAM admission showed decrement by 419 cases in 2017 (May to Oct.) compared to 2016 (May to Oct.), 99.1% of health facilities with TFP services serving as Stabilization Centers (SC) and the sum of OTP sites in all visited woredas were scale up to 420; ranging from 17 to 34 in each woredas. To provide key information on public health emergency nutrition activities, 12 out of 18 assessed woredas were reporting SAM cases weekly through PHEM.

Conclusion: The multi-sectoral emergency coordination forum meeting held irregularly and on ad-hoc base in most visited woredas. Epidemic of AWD and increment of malaria case were seen in different woredas. In addition, there were clinically suspected cases & death of anthrax and notable number of

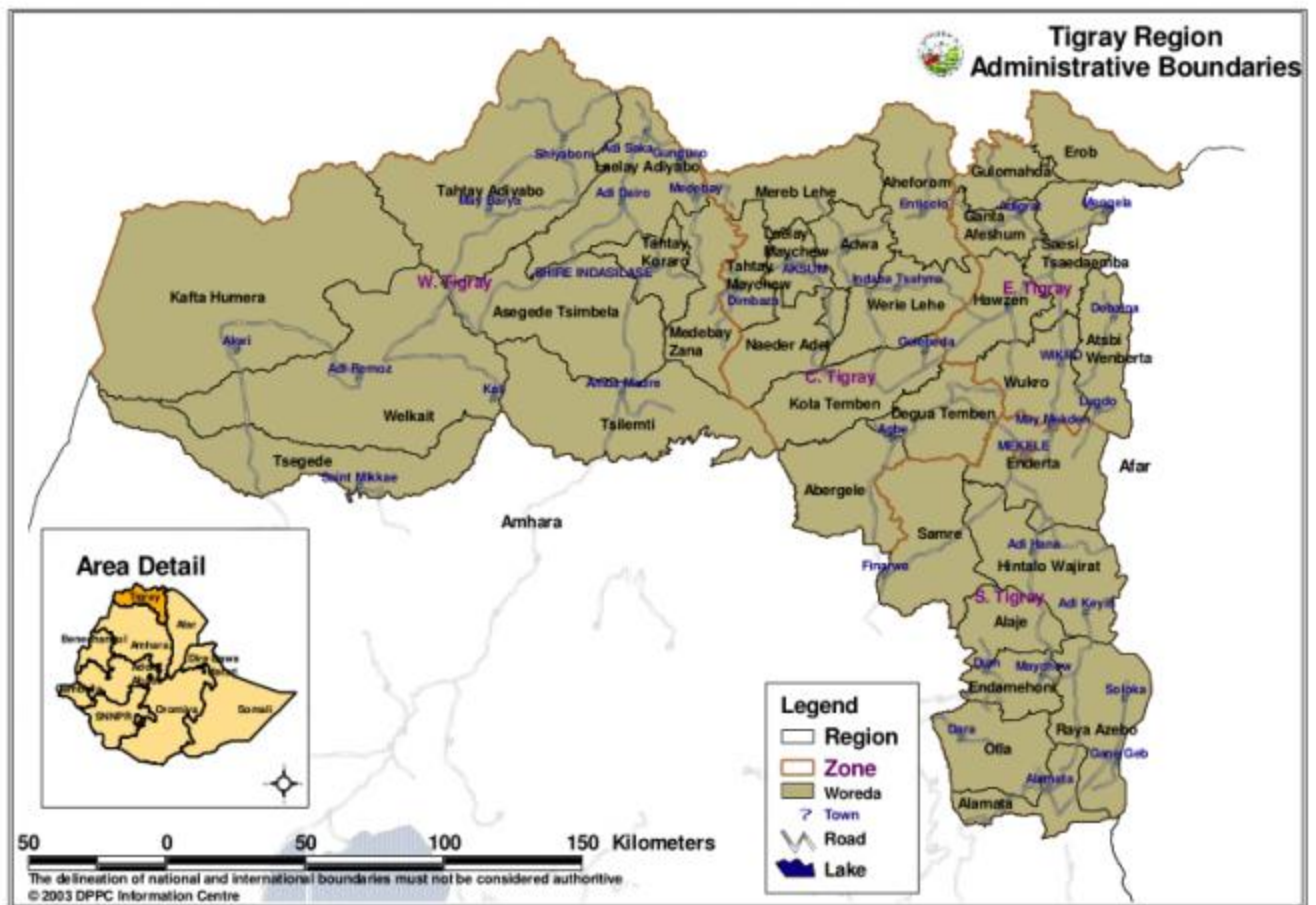
scabies cases has been reported in certain Woredas of the region. Most woredas have RUTF even though it may not be sufficient for next 3 months in most woredas and in all SC site facilities, there is no milk (F100 & F75) supply for next 3 month.

Introduction

Meher emergency need assessment is an assessment conducted once in a year in all the countries regional states, under leadership of National Disaster Risk Management Commission (NDRMC) and through its structures. Based on this, the team comprising of NDRMC, government sectors from federal and regional bureaus, UN agencies and NGOs set out to conduct the emergency need assessment in Tigray region from 21 Novber-8 December, 2017.

Tigray which is our assessment focused regional state is located in the north part of Ethiopia with a latitude of 12°16' to 14° 49' N and longitude of 36° 27' to a 40° 00'E. (1) The regional state has an estimated area of 53,638 Km² and a total population of 5,056,000 (CSA 2007 census projected for 2015). It borders Eritrea to the north and Sudan to the west, while in the east it shares a regional border with the Afar region and in the south-west with Amhara region. The region is sub-divided into seven administrative zones and 52 *woredas* (districts) with its capital in Mekelle. The climate is generally sub-tropical. Over 80 per cent of the population reside in rural areas, with their livelihoods derived from subsistence farming. The health infrastructure consists of 222 health centers, 668 health posts and 16 hospitals. Primary health care coverage in the region has now reached approximately 96 per cent. (2)

All zones in Tigray Region have rainy season once a year, except the southern and southeast zones of the region which get major and minor rainy seasons twice in a year. Meher emergency need assessment is crucial to forecast and assess the magnitude of the emerging threats and accordingly to make necessary interventions, plans and preparations to early prevent unnecessary life and socio-economic damage.



Map Created by: Disaster Prevention and Preparedness Commission (DPPC) Information Centre
Figure 52. Tigray Region Administrative boundaries, Ethiopia, 2017.

Objectives

The main objectives of the Health and Nutrition assessment are:

- Assess the extent, type, magnitude, severity and likely of the different health and nutrition hazards and identify risk populations in the most vulnerable *woredas of the Region*.
- Assess the existing capacity of the health and nutrition services to address the emergencies likely to occur. It also determines the short coming (gap) in the capacity of the existing services to address the problem.
- Identify areas where emergency assistance might be needed and come up with reasonable estimates of the size of the population needing emergency assistance and the duration of assistance.
- Based on the findings on the assessment of risks for, and the need to address, potential emergencies and develop necessary plans for fostering preparedness sectors to adequately address the potential emergencies.

Methodology

- Collect data on key indicators that have impacts on human health and nutrition by use of recently updated structured questionnaires.
- Conduct meeting and discussion with officials.
- Undertake interview with regional and *woreda* level health officials.
- Undertake discussions with community leaders at *kebele* level.
- Review existing relevant documents (secondary data) based on the agreed tools

Result

For this 2017 Meher Rapid Need Assessment, the NDRMC were assigned two teams for Tigray Regional state; the 1st team cover South, South-East & East Zone (8 woredas) and the 2nd team cover Central & North-West Zone (8woredas). A total of 5 zones and 16 *woredas* were selected and visited by the assessment team with criteria of how the zone (*woredas*) were being affected by the draught. Accordingly, those of the *woredas* which have been selected for the assessment were; three *woredas* from north west *zone* (Tselemti, A/tsimbla and T/Adiabo.), five *woredas* from central *zone* (Ahferom, W/Leke, K/tembien, T/Abergele and M/Leke), three *woredas* from eastern *zone* (K/awelalo, Saesi Tsaedaemba and Hawezien), two *woredas* from southern *zone* (Ofila and R/azebo) and three *woredas* from south eastern *zone* (Enderta, H/wajirat and S/samre).

Socio-Demographic Profile

The population of the visited 16 Woredas is 2,524,766 (1,284,931 male and 1,331, 817 female). Of the total population in the assessed Woredas; 373,396 are under five years children, 600,967 are 15-49 years old reproductive age women and 85,842 are lactating and pregnant women. The table below is presented for more illustration.

Table 33. Zonal Population Distribution of Tigray Region by sex and age category, 2017.

Indicators	The Visited Zones of Tigray Regional State					Total
	Eastern	South-Easter	Southern	Central	North-Western	
Male	249,300	269,761	186,892	385,654	193,324	1,284,931
Female	257,812	278,534	193,364	403,025	199,082	1,331,817
Under 5	72,978	79,996	55,273	116,395	48,755	373,396
Women of reproductive age (15-49 yrs.)	118,597	128,740	90,513	179,129	83,988	600,967
Pregnant and Lactating women	17,242	15,515	12,929	26,815	13,342	85,842
Total Population	507,112	456,317	380,256	788,675	392,406	2,524,766

Public Health Emergency Coordination and Preparedness

All visited Woredas have emergency coordination forums which lead by woreda's administrators or by delegated officials. Majority of the emergency coordination forum meeting held at monthly base, there was a practice of conducting the meeting every week during epidemics like Acute Watery Diarrhea (AWD). The assessment team noted that 75% of the visited Woredas have Emergency Preparedness and Response Plan (EPRP), but it is not well detailed and comprehensive. The EPRPs didn't include all possible health hazards; AWD and to some extent malaria are the most common diseases highlighted in the EPRPs. Four Woredas; namely *Gulomekeda*, *Atsbi-Womberta*, *Hintalo-Wejerat* and *Raya-Azebo* are the only Woredas that allocated a sum of 2.8 million ETB to mitigate any type of emergency including health emergency. Thus, health offices in these Woredas have access the emergency fund during epidemics.

All health offices and health centers in the assessed Woredas have Rapid Response Teams (RRTs) but they have technical capacity gap to perform what they are expected to perform.

Top Five Causes of Morbidity

Pneumonia, non-bloody diarrhea, Acute Upper Respiratory Infection (AURI), Infection of skin and subcutaneous tissues and Acute Febrile Illness (AFI) are the leading cause of disease for under 5 years old children. AURI, unspecified diseases and parasitic infections, trauma, infection of skin and subcutaneous tissues and AFI are the main cause of disease for adults above 5 years old.

Status of Outbreak Prone Diseases

The morbidity and mortality situation of epidemic prone disease like AWD, Malaria, measles & meningitis has been assessed for the period of May to October in 2016 and 2017. The finding is described below.

I-Acute Watery Diarrhea (AWD)

There was an epidemic of AWD in all visited Woredas in 2017. A total of 550 cases and 7 deaths are reported from May to October 2017. Large numbers of AWD cases are reported from *Hintalo-wejerat* (91), *Ahferom* (89), *T/Abergelle* (84) and *Kilte-Awlailo* (65) while *Emba-Alaje* woreda reported 2 cases. However, the number of cases reduced by 33% in 2017 compared to the total cases reported in 2016. Lack of access to safe and adequate drinking water, poor hygiene and environmental sanitation coupled by large number of pilgrims in holy water site were the major risk factors for the epidemic.

Table 34. Comparison of AWD cases and Deaths in Assessed five Tigray Region by the year 2016 & 2017.

Zone	2008/09 (2016)		2009/10 (2017)	
	Cases	Death	Case	Death
North West	328	9	39	2
Central	377	7	233	4
Eastern	29	1	71	0
South-East	28	0	91	1
Southern	52	0	116	0
Total	814	17	550	7

II-Malaria

Malaria is one of the major public health important diseases in the region. An integrated preventive strategy is implementing to prevent the incidence of malaria in the region. Distribution of Long Lasting Impregnated Nets (LLINs), Indoor Residual Spray (IRS), early detection and treatment of cases and environmental management are among the approaches employed to prevent malaria.

A total of 45,247 malaria cases have been reported from May to Oct. 2017 in 16 Woredas where the assessment is conducted, a 12.7% less caseload compared to cases reported in the same months of 2016 (51,835 cases). However, there is an increment of malaria cases by twofold in Tanqua-Abergelle and Raya-Alamata Woredas in 2017.

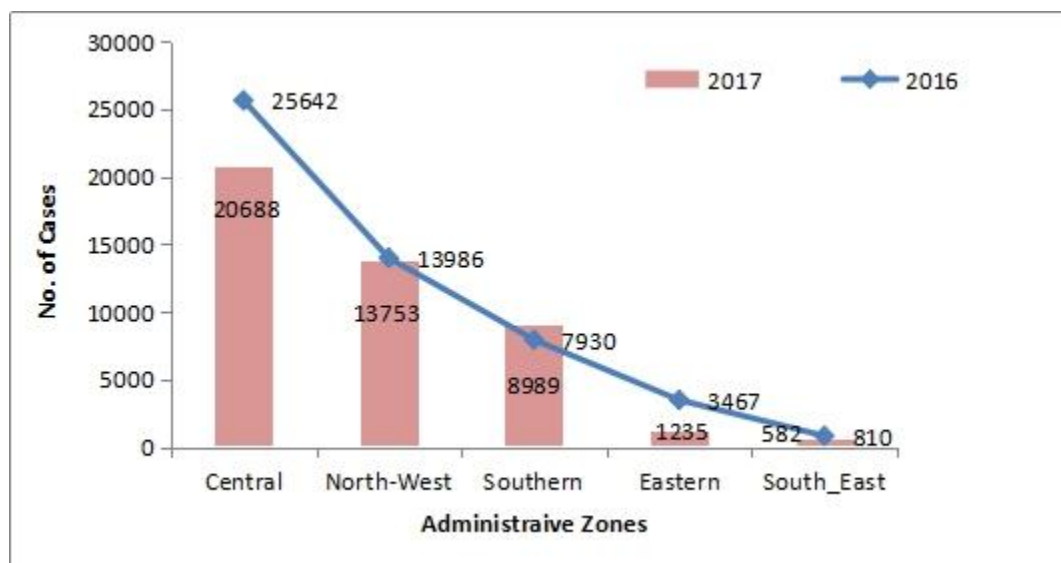


Figure 53. Comparison of Malaria Cases in five Assessed Zones of Tigray Region by the year 2016 & 2017.

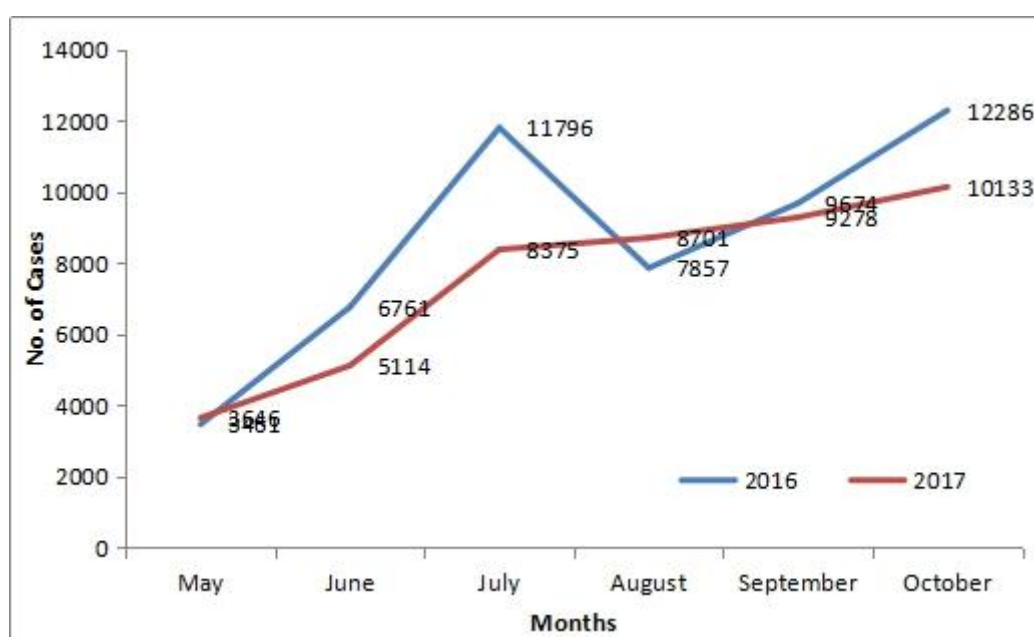


Figure 54. Trends of malaria cases by the year 2016 & 2017 in Tigray Region starting from May to October respectively.

III-Meningitis

There is no reported meningitis outbreak across the assessed Woredas. Half of the assessed Woredas, i.e., *Gulomekeda, S/T/Emba, Kilte-Awlailo, Atsbi-Womberat, Hintalo-Wejerat, Emba-Alaje, Raya-Alamata* and *Raya-Azebo* have reported conveyance of meningitis vaccination in the

past 3 years. But these Woredas couldn't present the date and coverage of the vaccination except *S/T/Emba* and *Raya-Azebo*.

IV-Measles

There was neither Measles outbreak nor measles cases and deaths reported in the visited *Woredas*. The average coverage of measles vaccination for quarter 3, 2017 (1st quarter of 2009/2010) was 86%. *Gulomekeda*, *Kilte-Awlailo*, *S/T/Emba* and *Ahferom* *Woredas* reported low measles vaccination coverage of 47.3%, 59.3%, 70% and 73.4% respectively. The average measles coverage of the visited *Woredas* is in line with the regional average (86.5%). There is no any conducted campaign like Supplementary Immunization Activity (SIA) in the last 6 months to reach unvaccinated children in the assessed *Woredas*.

V-Anthrax

Clinically suspected 25 cases and 1 death of anthrax have been reported in *Gulomekeda* (22 cases & 1 death) and *S/T/Emba* *Woredas* from July to August 2017. Consumption of sick goat and cow meat were the source of infection in both *Woredas*.

VI-Scabies

Notable number of scabies cases has been reported in 3 *Woredas* of Eastern and Southern Tigray. In one-month period (Aug. 2017) 184 cases reported from *Atsbi-Womberta* and 171 cases reported from *Kilt-Awlailo* in just 2 weeks period (Oct. 26 to Nov. 10, 2017). Likewise, 1400 scabies cases reported from July to Oct. 2017 compared to 800 cases in similar period of 2016 in *Raya-Alamata* *Woreda*. There was also a report of school children affected by scabies from *Enderta* *Woreda*. Poor access to safe and adequate water supply, poor personal hygiene accompanied by low awareness is the main reasons for high scabies caseload. As the infection is highly contagious a single scabies case will spread the disease to a significant proportion of the population in a short period of time unless due attention is given to contain the disease.

Availability of Emergency Drugs and Supplies

Almost all Woredas have adequate level of emergency drug stocks and supplies for one month. Basic Emergency Obstetric and New Born Care kits and emergency medicines and supplies to support care of rape survivors are also available in health centers across the assessed Woredas. However, Rapid Diagnostic Test (RDT or pastorex) and lumper puncture (LP) set for meningitis diagnosis aren't available in all assessed Woredas. Similarly, standard Cholera Treatment Center (CTC) kit for AWD case treatment is available in few Woredas, namely *Lailay-Adiabo*, *Tahtay-Adiabo*, *Tanqua-Abergelle*, *Kola-Tembien* and *Ahferom* Woredas. Yet, the following Emergency drugs and supplies were scarce in few Woredas:

- Tetracycline eye ointment isn't available in *Mereb-Leke*, *Ahferom*, *Emba-Alaje*, *Raya-Alamata* and *S/Ts/Emba* Woredas;
- RDT for malaria diagnosis isn't available in *Mereb-Leke* woreda completely and in shortage in *Raya-Azebo* Woreda.

Risk Factors for Outbreak Prone Diseases

I-Risk factors for Malaria

There are 1,481,046 people who live in 271 malarious Kebelles in the assessed Woredas. Presence of unprotected irrigation, Perennial River with the possibility of interruption and erratic rainfall in these kebelles could be used as a potential conducive breeding site for *Anopheles* mosquitoes. Therefore, preventive measures like community awareness creation, environmental management, LLINs distribution, IRS and early case detection and treatment are implementing in the assessed Woredas to prevent the possibility of malaria outbreak.

Accordingly, thirteen (80%) of the assessed Woredas have over 80% LLINs coverage, but 3 Woredas is low. *Raya-Azebo*, *S/T/Emba* and *Kilte-Awlailo* have LLINs coverage of 48.7%, 63.3% and 68% respectively. Likewise, 10 Woredas have over 85% IRS coverage.

However, a significant number of LLINs, particularly distributed in 2007 E.C needs replacement as the optimum service life time is approached.

Table 35. LLINs and IRS Coverage of Malaria Endemic Area (Woreda) of Tigray Region, 2017.

Woredas	LLINs	IRS	Woredas	LLINs	IRS
Gulomekeda	84%	-	Ahferom	100%	95%
Saesi Tsaedaemba	63.3%	-	Kola-Tembien	100%	100%
Kilte-Awlailo	68%	-	Weri-Leke	100%	95%
Atsbi-Womberat	100%	-	Tanqua-Abergelle	100%	-
Hintalo-Wejerat	90%	-	Mereb-Leke	100%	100%
Emba-Alaje	100%	-	Lailay-Adiabo	100%	92%
Raya-Alamata	100%	100%	Tahtay-Adiabo	100%	100%
Raya-Azebo	48.7%	85%	Tselemti	100%	93.5%

II-Risk factors for AWD

Access to latrine facility and safe water supply is 75.9% and 57.4% respectively as reported by the assessed Woredas. However, it is difficult to trust the data, particularly on latrine access as it has huge discrepancy with the actual situation in the ground as verified during last year report. Moreover, the household latrines are poorly constructed using local materials so as not in a position to stop contamination of immediate environment. The recurrent drought in the Woredas will also aggravate the shortage of water for drinking and domestic use. On top of that there are holy water sites that don't have adequate Water, Sanitation and Hygiene (WASH) services for pilgrims who visit these sites. Hand washing practice using soap or its substitute is also a serious challenge. Therefore, the occurrence of waterborne diseases including AWD in these Woredas is inevitable.

Nutritional Screening for Children of 6-59 months and Pregnant & Lactating Women

The screening coverage of 6-59 months children was 80% in the assessed *woredas* based on reviewed 6 months average mass screening data from May- October 2017, which is far better coverage compared with average regional screening coverage of 57.4% (May to Sept 2017). However, the screening coverage was very low (below 50%) in G/mekeda (46.5%) and L/Adiabo (32%), while the screening coverage reported was below 80% in S/T/Emba (70.4%), M/Leke (63%) and K/Awlaelo (71.9%). The average screening report showed that 3.0% of

children have a proxy Global Acute malnutrition (GAM) and 0.2 % with proxy Sever Acute Malnutrition (SAM). In the assessed *woredas* there was 8 edematous case between May-Oct 2017. Overall, proxy GAM rate of the assessed *woreda* is acceptable, which is below 5% except 8% in Alage, 6.5% in Tselemti and 5.7% in M/Leke which shows these *woredas* poor nutritional status for 6-59 months children.

While average screening coverage of Pregnant and lactating Women (PLW) was 65.6% with the lowest coverage in Eastern zone as compared to the other *zone*. Average GAM level of PLW in the assessed *woredas* was 21% with high GAM rate in S/T Emba (44%), K/Awlalo (43%), W/Leke (40.9%), M/Leke (36%), K/Tenben (31.3%) and Tselmti (29.8%) *woredas*. The screening coverage of PLW of assessed *woreda* is good compared with average regional screening coverage of 44.2% (May to Sept 2017). Refer the fig. below and annex 2 at the end for better description on this regard.

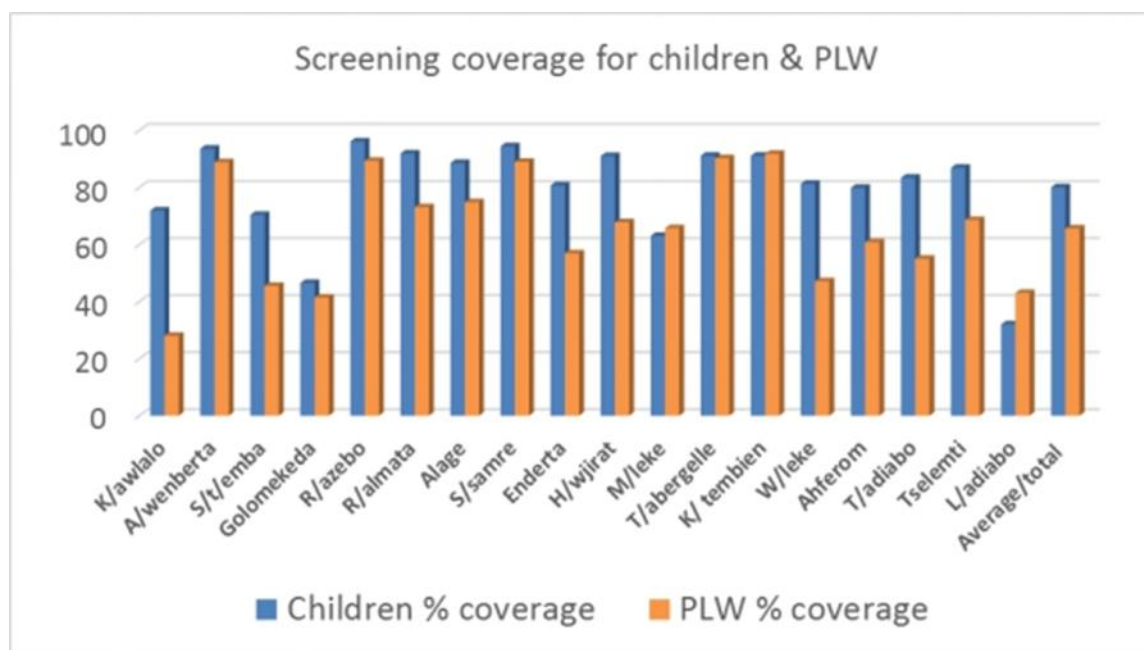


Figure 55. Screening coverage for children and PLW in different visited *woredas* of Tigray Region, May to October, 2017.

Vitamin A Supplementation and De-worming coverage in 1st Quarter of 2017.

Vitamin A supplementation and deworming coverage were captured for Q1 (July to Sept) of 2010 in the assessed woredas. The service coverage for vitamin A supplementation and deworming collected from the woredas was relatively better with T/Adiabo, Tselemti, K/Temben, T/Abergele and R/Azebo achieving planned target for Vitamin A supplementation and Tselemti, K/Temben, A/Womberta, Enderta and R/Azebo achieving as planned.

However, in some of the woredas achievement in Vitamin A supplementation was not corresponding with deworming coverage (T/Adiabo, T/Abergele & Alaje). Besides vitamin A supplementation and deworming coverage was very low M/leke while low in Gulomekeda, K/Awlaelo and W/Leke woredas. Summary of performance coverage for Vitamin A and De-worming in the assessed woredas is indicated in the figure below.

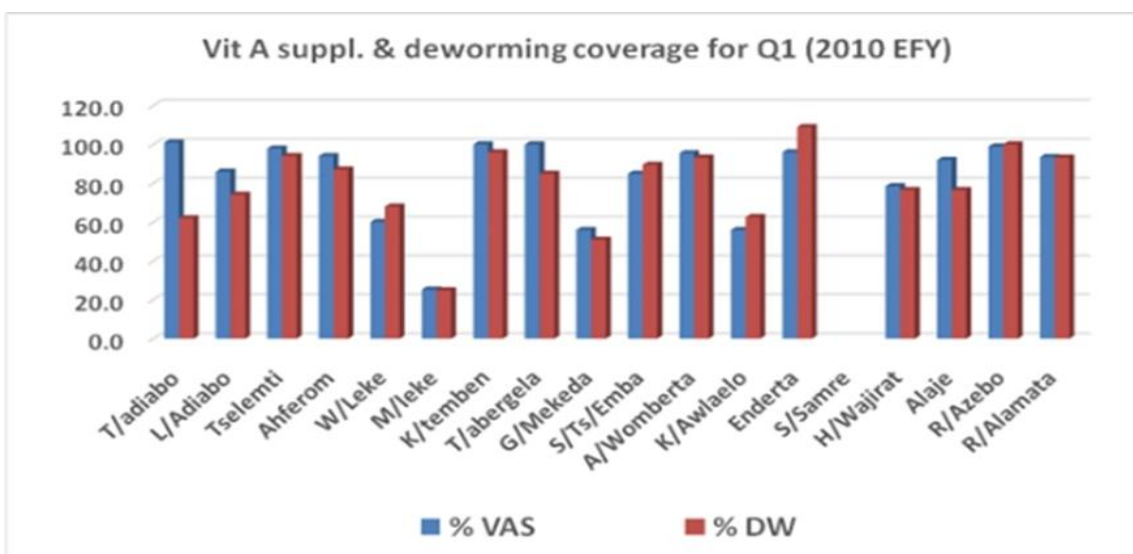


Figure 56. Vitamin A supplement & deworming coverage for Q1, 2017 in visited woreda of Tigray Region

Therapeutic Feeding Program (TFP) for SAM management

Health Facilities TFP Services

Review of health facilities with TFP services (outpatient and inpatient) was conducted in the assessed woredas that revealed 99.1% with 38 health facilities serving as Stabilization Centers (inpatient) ranging from 1 to 3 SCs per woreda. Besides there are 420 Outpatient Therapeutic Program (OTP) sites ranging from 17 in Enderta to 34 in W/Leke with all health posts in each woreda with OTP services. Detail of TFP services in health facilities is indicated in the annex 3 at the end.

Therapeutic Feeding Program (TFP)

The Therapeutic Feeding Program (TFP) for Sever Acute Malnutrition (SAM) management data was reviewed from May to Oct for 2016 and 2017 for SAM case admission and SAM management quality indicators including cure rate. SAM admission showed decrement by 419 cases in 2017 (May to October) compared to 2016 (May to October). However, there is slight increment of admitted cases in Ahferom, T/Abergele and K/Awlaelo in 2017 compared to 2016. TFP report for 2016 in T/Adiabo, Tselemti, W/leke and partly in Gulomekeda and S/Samre was not provided by woreda with one-month data missing in K/Temben while not possible to get data for 2017 in S/Samre and one-month data in R/Alamata. The main reason for missing information is short notice for the data and short stay in the woredas (only maximum of one day). Detail information on this regard is indicated in the annex 4.

TFP Quality Performance

Outcome of the therapeutic feeding program for SAM management of the assessed *woreda* was good based on the sphere standard for the performance/outcome indicators. Recovery (cure) rate of May- Oct 2016 and May-Oct 2017 of the assessed *woredas* was acceptable though in some of the woredas (T/Abergele, A/Womberta and Gulomekeda); it is lower in 2017 compared to 2016 while it is lower than the regional target of 95% cure rate in many woredas both in 2016 and 2017 as indicated in figure 6 below. Overall, the quality of CMAM (TFP) services need improvement to improve the cure rate. Similarly, death rate and defaulter rate of the assessed *woredas* was acceptable for both May- Oct 2016 and May-Oct 2017.

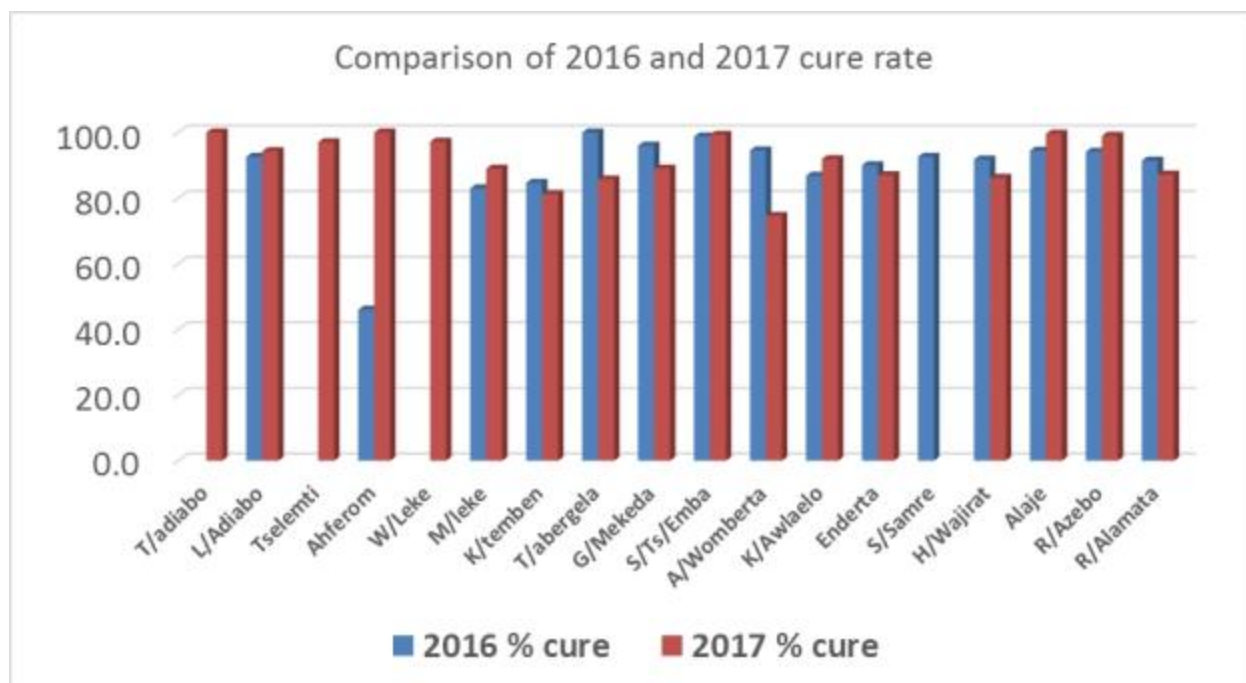


Figure 57. Comparison of cure rate of assessed woredas from May to October in 2016 and 2017

Comparison between SAM cases identified during screening and admitted in TFP from May-October 2017 showed that all identified are not linked to CMAM services in some of the woredas (H/Wajirat, R/Alamata & T/Abergele) while on the other hand many admitted SAM cases to CMAM services are self and WDA referred (M/Leke, Alaje, Tselemti & K/Temben) as indicated in figure 57 below.

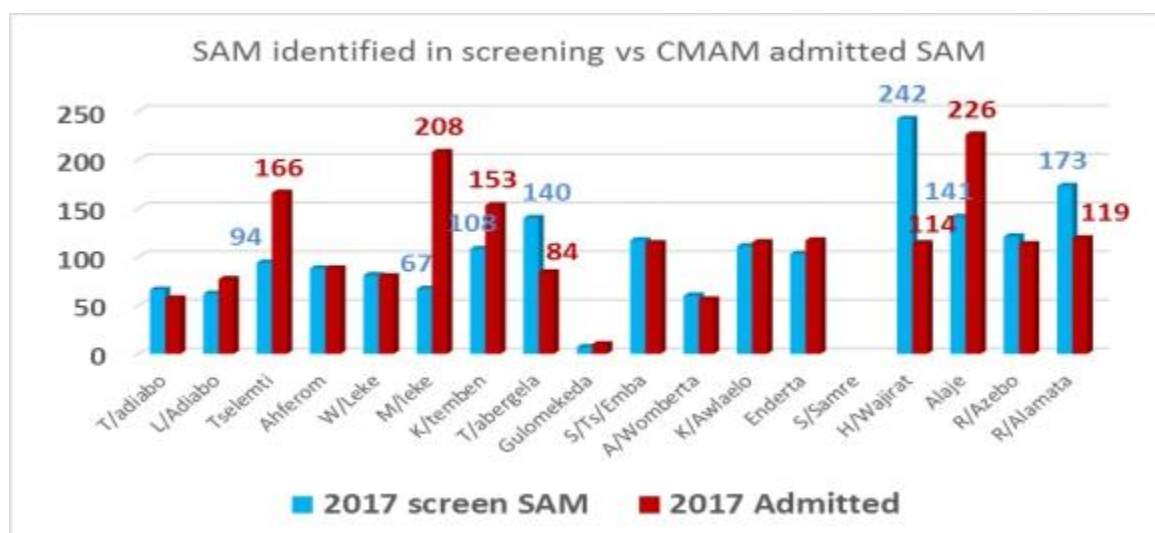


Figure 58. Comparison of SAM identified during screening and SAM admitted in TFP services

SAM weekly report

To provide key information on public health emergency nutrition activities, 12 out of 18 assessed woredas were reporting SAM cases weekly through PHEM. In the assessed *woreda* there was no any recent SAM management training, most of the health extension works deployed were trained on SAM management in earlier years and the assessment team didn't get the actual number of health workers and HEW that have been trained on SAM management from the total health facilities of the assessed woredas.

Availability of CMAM Supplies

The major Community Management of Acute Malnutrition (CMAM) supplies assessed were Ready-To-Use-Therapeutic Food (RUTF), F75 & F100 milk for SC service, routine drugs (2nd line) and availability of clean water supply in SC sites. Most woredas have RUTF though in most it may not be sufficient for next 3 months. However, in all SC facilities there is no milk (F100 & F75) supply for next 3 months; with 50% of SC sites no F100 while 44.4% SC sites with no F75 and 11.1% could not get information on supply status at all.

Water availability at TFU/SC sites was also assessed that showed 73.6% of the health facilities with SC (28 health centers & primary hospitals) have access of safe water supply. Assessment of supply is summarized in figure 50 below

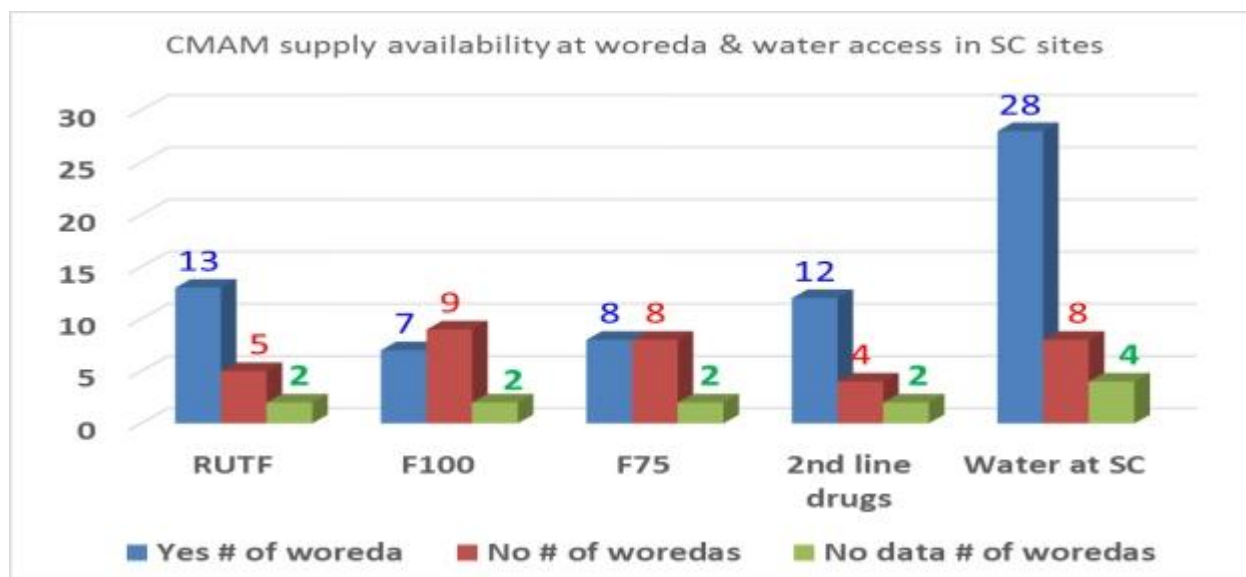


Figure 59. CMAM supply availability at woreda and water supply in SC sites

Target Supplementary Feeding (TSF) Program

Targeted Supplementary Feeding Program (TSFP) is available in 12 out of 18 assessed *woredas*, of which 8 (T/Abergele, W/leke, Ahferom, Gulomekeda, A/Womberta, Enderta, H/wajirat and R/Azebo) are pilot 2nd generation TSFP *woreda* and the other 4 *woredas* (M/leke, S/Ts/Emba, K/tembien and Tselemti) are 1st generation (regular Woreda).

In 2nd generation TSFP *woredas*, distribution of supplementary food was conducted last month (Nov 2017) while it is interrupted in 1st generation (regular) 4 *woredas* since Concern Worldwide project phased out at the end of Oct 2017. Regarding supply storage facility, there was no *woreda* level storage of TSFP supplies but have *kebele* level sufficient storage for at least two months in the 2nd generation 8 *woredas*.

In the assessed 2nd generation TSFP *woredas* children discharged from TFP (CMAM) were referred to TSFP service and receive two-month ration for one time but children in non TSFP *woredas* and since Nov 2017 in 1 generation TSFP *woredas*, SAM discharged children have no access for TSF service except counseling service for the mother or caretaker on child feeding/care practices. Detail TSFP service for MAM and PLW < 23 cm MUAC is indicated in detail in the annex 6.

Challenges for Emergency Health and Nutrition

As health and nutrition assessment team, we can have captured the following as major challenges in most of the visited woredas.

- Lack of budget and transport for rapid emergency response during epidemics;
- Poor access to safe and adequate water supply at community and institution level
- Shortage of skilled health professional to provide quality health care for AWD cases as per the national protocol
- High turnover of technical staff at health office
- Shortage of National guideline, standard case definition on AWD, Measles, AFP, Meningitis, Rabies Guinea worm, ...
- Shortage of standard CTC kit for AWD;
- Inadequate monthly nutrition screening for children 6-59 months and PLW and quality issues as many SAM cases not identified during screening
- Data inconsistency, discrepancy and alarming data reliability for registered & reported services
- Inadequate SAM management service quality
 - Identified SAM cases not all linked to CMAM services
 - Poor CMAM supply management including supply stock out and letting supplies to expire at health facilities
 - Inadequate weekly weight gain monitoring inducing long stay in service and discharge criteria adherence at HCs
- TSFP supply breakout in 1st generation TSFP 4 woredas

Conclusion

- The assessment team noted that majority of the visited Woredas have emergency preparedness and response plan (EPRP), but it is not a well detailed and comprehensive one in its functions and also understand that it does not include all possible health hazards. On top of that emergency coordination forums meet irregularly and on ad-hoc base and emergency fund is not available in majority of the assessed Woredas.
- In assessing the 2017 year's morbidity and mortality situation of epidemic prone disease like AWD, Malaria, measles & meningitis, the team informed that there was an epidemic of AWD in all visited Woredas and an increment of malaria cases by twofold in two Woredas. In addition, there were clinically suspected cases & death of anthrax and notable number of scabies cases has been reported in certain Woredas of the region.
- Regarding to emergency drug and supplies assessment, standard CTC kit for AWD case treatment is available only in few Woredas and Tetracycline eye ointment & RDT for malaria diagnosis are not completely available or a shortage in limited Woredas
- Some of the risk factor for AWD like Access to safe water and latrine facility and Hand washing practice using soap or its substitute are still a serious challenge.
- The team also noted that a significant number of LLINs distributed in 2007 E.C has served for nearly 3 years, the optimum period one LLIN is expected to service, thus needs timely replacement.
- The nutritional screening coverage of 6-59 months children and PLW in the assessed woredas were good based on the reviewed 6 months average data (May to Oct. 2017) as compared to with the regional screening coverage. But there are still certain specific woredas with lower coverage on this regard.
- The average recovery (cure) rate which is one of the performance or outcome indicator of the therapeutic feeding program for SAM management were lower in the assessed woredas as compared to the regional target.

- In reviewing data of the Therapeutic Feeding Programme (TFP) for SAM and CMAM management from May to Oct for 2016 and 2017, there was problem obtaining complete data and has discrepancy.

Recommendation

- Preposition key emergency drugs and medical supplies like RDT, LP set for meningitis diagnosis and complete CTC kits for AWD at hotspot Woredas and RHB;
- Support and Strengthen the capacity of woreda PHEM personnel to prepare well detailed and comprehensive EPRP and advocate decision makers to allocate accessible emergency fund when there is a need;
- There is a need to strengthen the rapid response team through provision of refresher training, allocating operational budget for RRT, transport, and strengthen the woreda emergency task forces as well as coordination forums.
- Due attention for safe water provision and improved hygiene and sanitation interventions to prevent WASH related diseases including AWD, scabies.
- Improve monthly screening coverage of 6-59 months children and PLW and check for quality of report.
- Improve supply management CMAM service and stock monitoring.
- Undertake close monitoring and follow up of nutrition programs at all level and improve reporting
- Strengthen Coordination mechanisms at all levels.
- Continue TSFP in the affected *woredas*.

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Chapter VIII- Protocol/Proposal for Epidemiologic Research Project

ADDIS ABABA UNIVERSITY COLLEGE OF HEALTH SCIENCES SCHOOL OF PUBLIC HEALTH

RESEARCH PROJECT SUBMISSION FORM

Name of Investigator	Afework Melesse
Name of Advisor(s)	Pro. Alemayehu Worku, Mrs. Muluken Gizaw
Full title of the research projects	Knowledge, Attitude and Practice of Scabies among local population Raya-Alamata Woreda, Southern Tigray Region Zone-2017.
Duration	June 1-September 30,2016
Study area	Raya-Alamata Woreda, Southern Tigray Region, Ethiopia.
Total cost of the project	62,480 Eth Birr
Address of investigator	Tel: +251913727860 Mail: afaemelese2017@gmail.com

Summary

Background: Scabies is becoming a major public health problem in drought affected hotspot area of our country where there is poor water supply, sanitation and overcrowding. Although a lot of attention has been paid to the clinical aspects, there is little information on the knowledge attitude and practice of local populations toward scabies which is paramount important for the control and prevention strategies. Therefore, we aim to describe people's knowledge, attitudes, and practices toward scabies in Raya-Alamata district.

Objective: To assess knowledge, attitude and practice about scabies among the local population of Raya- Alamata Woreda of South Tigray Regional Zone.

Method: A community based cross-sectional study design will employed in selected sub districts or tibias' where a community survey is going to be carried out using semi-structured questionnaires. A sample of 422 community participants will be interviewed to assess their knowledge, attitude and practice toward scabies. Data will enter and analyze in Epi- Info version 7.2, descriptive statistics will use to give a clear picture of background variables and association of different variables with knowledge, attitude and practice of the community on scabies will establish, considering a significance level of 0.05.

Work plan: Data collection will be started on January1, 2017 and ends on May 15, 2017. The study will be completed in May 25, 2017.

Budget: The required cost for the study was estimated to be 62,480 ETB.

Keywords: Knowledge, Attitude, Practice, local population and Scabies.

Introduction

Background

Since ancient times, people around the globe have affected by various types of epidermal parasitic skin diseases (EPSD). These skin diseases notoriously known being a cause of high patient morbidity, account for a high proportion visits & impose huge burden to primary health care units. (1)

Human Scabies which described first more than 2500 years ago is one of those typical epidermal parasitic skin diseases. It is caused by an infestation of the skin by the human itch mite (*Sarcoptes scabiei* var. *hominis*) and transmitted through prolonged skin-to-skin contact with a person with conventional scabies. Crusted scabies (formerly called Norwegian scabies) is a more severe form of scabies in which a person is infested with a large number of mites and is a highly contagious. Indirect transmission may occur through contact with objects contaminated by a person with crusted scabies but it is rare if the person has conventional scabies. (2)

Based on the different ways of rash that can appear with this skin infection, we can classify the conventional scabies as; typical, nodular, infantile and complicated scabies. Scabies that affects occupants of a residential facility, such as boarding schools, rest homes, hospitals, prisons and camps is also classified as institutional scabies. (3)

Symptoms of scabies usually begin 3-6 weeks after primary infestation but occurs earlier at 1-3 days in a reinfested person probably due to prior sensitization to the mite and mite products. Scabies is therefore infectious before the rash develops. (4)

A lack of a history of itching does not exclude scabies (e.g. in young babies; neurological conditions with decrease /loss of sensation.) History of itching in family members or close contacts concurrently or in the recent past strengthens the diagnosis of scabies. (2, 4)

While scabies by itself is a distressing health issue, the greatest impacts occur as a result of associated bacterial infections. Scabies commonly leads to impetigo (skin sores), and severe skin and soft tissue infections and sometimes even invasive bacterial infection and life-threatening

toxic shock syndrome can follow. The body's immune response to *Streptococcus pyogenes* bacteria can cause kidney damage and possibly rheumatic heart disease. Scabies is therefore a cause of considerable illness and is also linked to some deaths. (5)

As different epidemiological studies described, scabies is a relatively common infestation that can affect all human beings. But young children and the elderly in resource poor communities are the most vulnerable age groups. The highest rates occur in countries with hot, tropical climates, where this parasitic disease is endemic and in communities by which overcrowding and poverty coexist. (6)

A systematic review of population-based studies from various regions of the world (excluding North America) found prevalence estimates ranging from 0.2 to 71 percent, with the highest prevalence's in the Pacific region and Latin America. It also indicated that scabies affects more than 100 million people worldwide. (6)

Evidence from the literature also shows that the prevalence of scabies in African countries is persistently high, being as such noticeable among individuals, and in some specific groups and communities. (7)

In Ethiopia, as elsewhere, scabies is common where there is poverty, poor water supply, poor sanitation and overcrowding. In the Tigray Region for instance, there were 27,000 new cases reported between October 2015 year to March of 2016 year (8)

Similarly, for the year 2017 a high case load again reported from 3 woredas of Eastern and Southern Tigray Region that mean during one-month period (Aug. 2017) 184 cases reported from Atsbi-Womberta and 171 cases reported from Kilt-Awlailo within 2 weeks period (Oct. 26 to Nov. 10, 2017). Likewise, 1400 scabies cases reported from July to Oct. 2017 from Raya-Alamata Woreda. (9)

Thus, we selected Raya-Alamata woreda, one of the district in Southern Tigray Region for our KAP assessment of the community with the intention to put some important contribution in the future scabies prevention and Control strategies of the region.

Literature Review

Scabies, an ancient skin disease has been estimated to affect approximately 300 million people worldwide each year and it is commonly characterized by causing itching, pruritic skin rashes and due to subsequent scratching, leads to secondary bacterial infection like *Streptococcus pyogenes* and *Staphylococcus aureus*; cause acute glomerulonephritis, septicemia and rheumatic heart disease. (10)

This disease is worldwide in distribution and mostly endemic with high prevalence in resource-poor urban and rural communities of developing countries because of its improper management, and poverty leading overcrowding and is considered a significant public health problem. (11)

It also predominantly affects children living in poor and overcrowded tropical areas. This preferential distribution among younger populations is believed to reflect both increased exposure to the parasite and lack of immunity of the host. Scabies affects genders equally, and its ethnic differences are most likely related to variables such as overcrowded housing and socioeconomic and behavioral factors, rather than racial variables alone. (12)

Other risk factors include poverty, poor nutritional status, homelessness, dementia, and poor hygiene. Institutions such as nursing homes, extended-care facilities, and prisons are often sites of scabies outbreaks. Child care facilities also are a common site of scabies infestations. (11, 12)

Scabies, commonly known dermatological condition affects more than 130 million people worldwide at any one time with the highest rates occurring in Pacific Island countries and in many other hot, tropical climates including in Africa. The lowest prevalence rate for this skin disease is recorded in Western Europe. Its prevalence rate ranged from 0.2% to 71.4%. (13)

It has been added to WHO's list of Neglected Tropical Diseases (NTDs), in recognition of the very large burden of disease unlike many other NTDs. (14)

As indicated in study conducted by Annie and Wesley there are a number of studies from Mali, Malawi, Tanzania and Sierra Leone also point to scabies as one of the common skin problems in Africa. (14)

In Ethiopia, scabies has actually been rare for the past several years, but with the sharp drop in the availability of water due to the worst drought the country has faced in decades, the cases re-

appeared. With less water available to wash and maintain personal hygiene, there have been also outbreaks in the country. (8)

Statement of the Problem

Scabies is a highly occurring infectious skin disease in an area where a natural or man-made disaster like flooding, drought, civil war and conflict is relatively common and causing poor sanitation, shortage of water supply and overcrowding.

Ethiopia, one of the country that currently experiencing this disaster situation, has faced scabies outbreak in drought affected areas where there is shortage of safe water for drinking and poor personal hygiene as a result of direct impact of the drought caused by El NINO.

For its immediate respond, the Federal Ministry of Health (FMOH) in collaboration with other partners is making a plan that aimed at in rapidly stopping the community level transmission of scabies outbreak using multi- sectoral intervention approach.

Taking this thing in to consideration, we are going to made our assessment of knowledge, attitude and practice at community level with the assumption that this study foreword somehow an important contribution for prevention & control program me to stop local transmission of this communicable disease.

Significance of the study

Raya-Alamata, one of the district in Southern Zone of Tigray Region is our study site for KAP assessment, has reported notable cases of scabies for the year 2016 and 2017 which means 800 scabies cases from July to Oct. 2016 & 1400 cases in similar period for the year 2017. This high case load makes the disease one of the major public health concern for the regional health office authorities and has forced them to make their best effort in collaboration with other partners for control and prevent strategies.

To be effective, as well successful in the control and prevention strategies, participation of the local community is paramount important and knowledge, attitude and practice (KAP) of the community towards the disease is major determinant factor.

Therefore, the present study will design to assess scabies related knowledge, attitude and practice of local community in Alamata district, one of the three woredas of Eastern and Southern Tigray Region in which significant cases of scabies has reported for the year 2017.

Objectives

General Objective

To assess Knowledge, Attitude and Practices about scabies among the local communities of Raya-Alamata woreda in Southern Zone of Tigray Region.

Specific Objectives

- To assess knowledge of the communities towards scabies disease transmission
- To assess communities attitude towards scabies prevention and control activities
- To determine communities practice in scabies prevention and control program.

Methods and Materials

Study Area and Population

The study is going to be conducted in Raya-Alamata woreda. It is one of the five administrative districts in Southern zone of Tigray Regional State and is situated 600 Km North of Addis Ababa, capital city of Ethiopia and about 180 Km South of Mekele, city of the Tigray Regional State and at 12°15'N latitude and 39°35'E longitude.

The district bordered by Raya Azebo in the North, Ofla in the west, the Amahara National Regional State in the south and the Afar National Regional State in the East. It has ten tabias, namely: Tumuga, Selen Wuha, Limaat, Selam Bekalsi, Kulu Gize lemlem, Gerjale, Ta`o, La`elay Dayu, Tsetsera and Merewa. According to the 2007 nation census conducted by the Central Statistics Agency (CSA), the projected total population of the district for the year 2011 was 97,101.

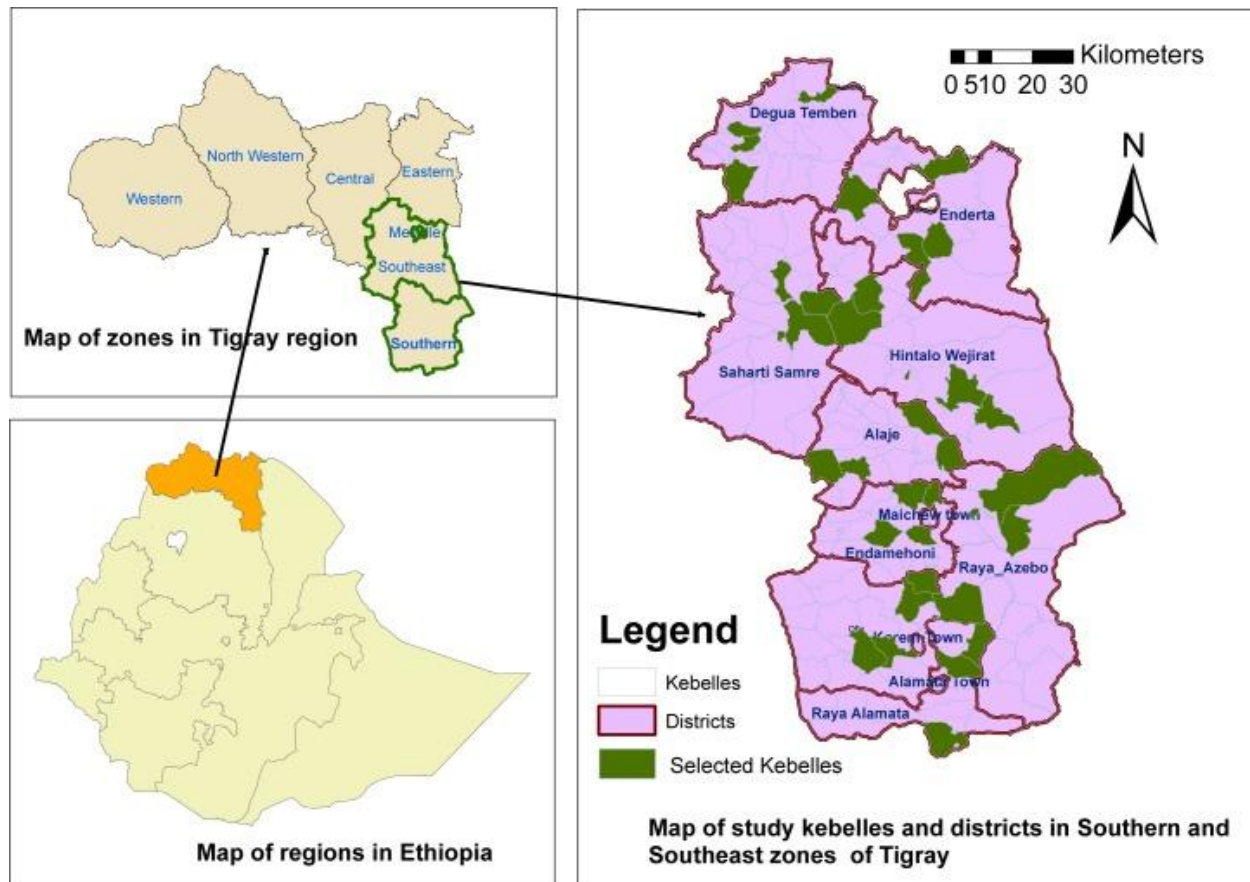


Figure 60. Map of study districts and kebeles in south and Southeastern zone of Tigray Region, 2017.

Study Design and Data Collection

A community based cross-sectional study design will conduct through 1st January 2017 to 30 May 2017 to assess knowledge, attitude, and practice of the community about scabies prevention and control activities by using questionnaire-based survey. In addition, a retrospective document reviews will be used to collect the required data.

Source Population

Our source population will be the total population in Alamata district, in South Tigray Zone.

Study Population

Local population in the selected sub districts or “tabias”.

Sampling Procedure

A simple random sampling strategy is going to be employed to collect the required data. Selection of sub-districts or “tabias” will do purposively based up on recent history of exposure to scabies in reference to the recorded data of Raya-district health office annual reports, transport accessibility and geographical situation.

Accordingly, those sub-districts or “tabias” that fulfill the minimal required criteria will include in the present study. A complete household listing will then carry out in each selected sub-district and a proportionate sample size allocation will do to each selected sub-district. From each selected household a single participant (household head) who will be voluntary and agreed to give informed consent will select for interview. In some cases, where households will not able to be accessed for any reason, the next house will choose to be involved.

Sampling Size Determination

The sample size will be determined by considering a 50% proportion, “P”. A proportion, “P” is derived from a previous study in Ethiopia with 95% confidence level and 5% marginal error. The sample will be calculated by using single proportion formula.

$$n = \frac{z^2 \cdot p \cdot (1-p)}{d^2}$$

$$n = \frac{(1.96)^2 (0.5) (0.5)}{(0.05)^2} = 384$$

Where; n = the number of study subjects (household heads) enrolled in the study,

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

P = proportion of participant in previously conducted KAP survey, which is 50%

d = margin of error, taken as 5%.

Assuming 10% non-response rate=38; the final sample size will be 422.

Data Management and Analysis

During data collection process, the data will check for completeness and all incomplete or misfiled questions will send back for correction. Data will enter and analyze in Epi- Info version 7.2. Descriptive statistics will use to give a clear picture of background variables like age, sex and other variables in a semi structured questionnaire. Moreover, association of socio-demographic variables with the knowledge, attitude and practice of the community on scabies will establish, considering a significance level of 0.05 ($p\text{-value} < 0.05$). The frequency distribution of both dependent and independent variables will work out. In addition, the retrospective data collected from the health office will analyze using descriptive statistics and graphics.

Ethical Consideration

Ethical approval to conduct the study will obtain from the Research Ethics Committee of AAU Healthy Science College. Letter of permission to carry out the proposed research will obtain from the Tigray regional health bureau and respective district authorities. We consider oral/written consent in our study and participants are going to be informed that, all the information they will provide be confidential. Besides, communication will make with their own local languages (Tigrigna/Amharic).

Dissemination of Findings

Results will be submitted to Ethiopia Field Epidemiology Training Program (EFETP). To help in future Interventions it will also address to governmental and non-governmental concerned bodies, like as Alamata district Health Office, South Tigray Zonal Health Department, Tigray Regional Health Bureau.

Expected Outcomes

The factors that may influence people against prevention & control of scabies will be clearly identified and documented. The result used for the community towards good attitude.

Work Plan

Table 36. Work plan for major activities to be done during Epidemiologic project

			January				February				March				April				May			
	Topic selection	PI																				
1	Proposal writing	PI																				
2	Submission to mentors and academic coordinator.	PI																				
3	Ethical approval	AAU Ethical Research committee																				
4	Budget release	AAU																				
5	Pretest	PI & DC																				
6	Data collection	PI & DC																				
7	Data analysis	PI																				
8	Writing first draft and submission to advisors	PI																				
9	Writing final draft and submission to mentors	PI																				

DC - data collectors

PI –principal investigator

Budget

Table 37. Cost breakdown to conduct the Epi project research

S. No	Budget Category	Measurement	Quantity	Number of days	Unit Cost in EBR	Total Cost
I TRAINING						
1.	Principal investigator	Person x days*unit cost	1	5	400	2000
2.	Field Supervisors	Person x days*unit cost	3	7	200	4200
3.	Data collectors	Person x days*unit cost	7	10	200	14000
4.	Data clerk	Person x days*unit cost	2	15	200	6000
Sub Total						26200
II. TRANSPORT						
1.	Fuel	Lt.	593	1	20	11860
2.	Car Rent	Number	1	15	1500	22500
Sub Total						34360
III. STATIONARY AND OTHER SUPPLY						
1	Questionnaire duplication	Questionnaire	500		4	2000
2	Flip chart paper	Each	2		85	170
3	Pen	Pack	2		170	340
4	Pencil	Pack	1		20	20
5	Eraser	Number	5		21	105
6	Sharper	Number	5		25	125
7	Marker	Pack	2		100	200
8	Printing paper	Pack	6		120	720
9	Printing and Binding	Pack	5		150	750
Sub Total						1920
Total						62480

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Chapter IX- Additional Outputs

9.1 Preparation of weekly epidemiologic bulletin and reports

Addis Ketema sub city Health Office

Public Health Emergency Management

I-Weekly Epidemiological Bulletin: Week 39 (September 25-October 1/2017)

Highlights of the week 39(15-21/01/10 E.C)

- In this week 92% of health facilities provided surveillance data. Zero report was sent by 83% of health extension professionals. Completeness and Timeliness for woredas were both 100%.
- No new SAM cases and four MAM cases were reported in week 39 of 2017.
- From the total of 20 malaria suspected fever cases four were confirmed in week 39.
- One relapsing fever case was reported in week 39 of 2017.
- Number of typhoid cases were 267 in week 39.
- Number of epidemic typhus cases were 225 in week 39.
- No AWD case was reported in this week.

1. Introduction

This weekly epidemiological bulletin serves to provide key information on public health emergency management activities and summarizes surveillance data and performance on epidemic prone diseases and other public health emergencies. The bulletin mainly includes surveillance data of week 39 of 2017 received from woredas through SMS and telephone call. It highlights the surveillance completeness and timeliness across all woredas, trends of diseases under surveillance, cluster of cases and events, ongoing outbreak and responses undertaken at all levels in the sub city.

2. Surveillance report completeness and timeliness.

Completeness and Timeliness.

In week 39 the aggregated surveillance result of completeness and timeliness rate for health facilities under each woreda were 92%. It shows some decrement as compared to week 38. The completeness in all woredas were above the standard value. (see figure 1) Timeliness and completeness for woredas were 100%.

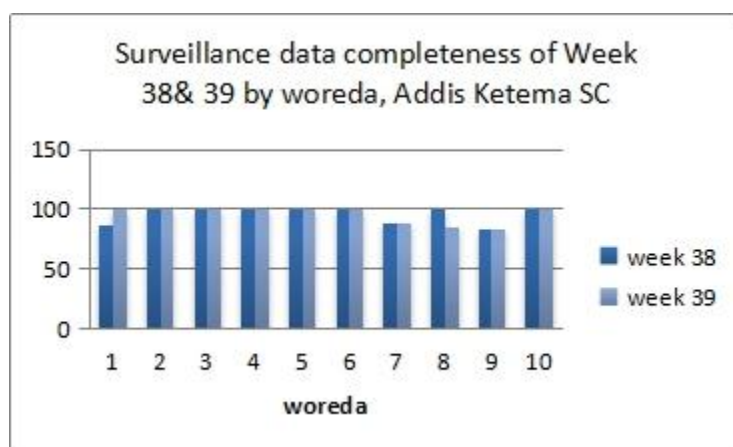


Figure 1. Week 38 and 39 surveillance data completeness by woreda, Addis Ketema Sub city.

3. Diseases and conditions

A. Malaria

From 20 suspected malaria cases four of them were confirmed by lab in week 39. Among them two were *P.falciparum* and the rest two were *P.vivax*.

B. Meningitis

No meningococcal meningitis case was reported in week 39 of 2017.

C. Typhoid fever

A total of 267 typhoid fever cases with no death were reported from all woredas in week 39. The number of cases were decreased as compared to the previous week by 21 cases. When we try to see the distribution of these cases higher number of cases were reported from woreda 1(17.6%),

followed by woreda 8(15.3%), woreda 9(14.9%). These woredas report high number of cases for few consecutive weeks. (see figure 2)

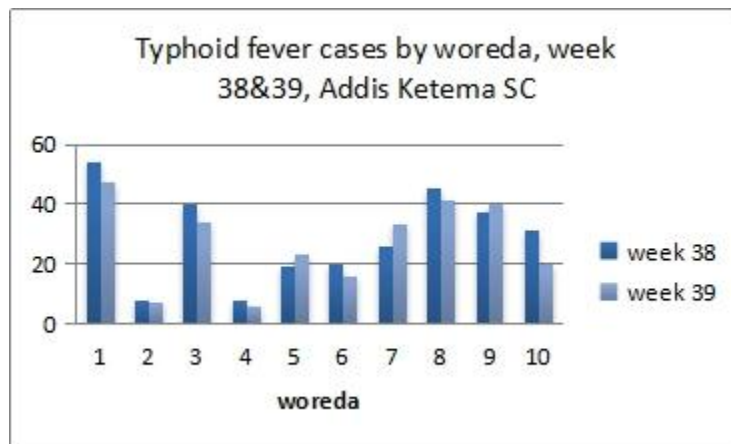


Figure 2- Trends of Typhoid fever cases by woreda, Addis ketema sub city, week 38 and 39, 2017.

D. Dysentery

A total of 42 dysentery cases were reported during week 39. Number of cases were increased by 10 cases as compared to the previous week. 62% of cases were reported from woreda 1. (see figure 3)

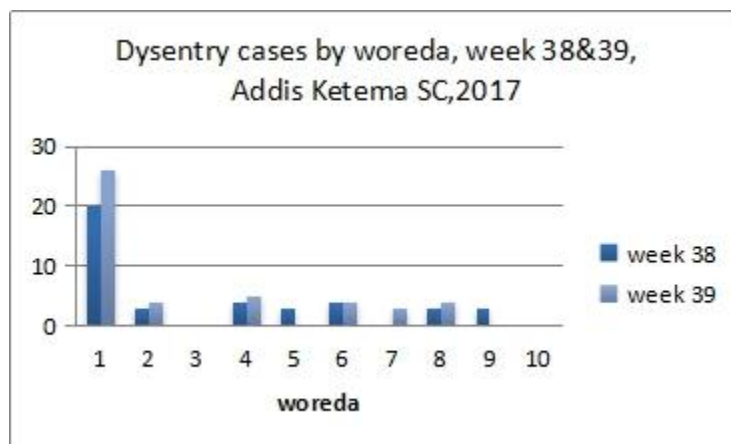


Figure 3-Trend of Dysentery cases in Addis Ketema sub city, week 37 and 38, 2017.

E. Relapsing Fever

One relapsing fever cases were reported in week 38 of 2017.

F. Epidemic Typhus

A total of 225 Epidemic Typhus cases were reported during week 39. The number of cases were decreased by 13 cases as compared to the previous week. Higher number of cases were reported from woreda 8(20.4%), 5(20%) followed by woreda 9(16%). (see figure 5)

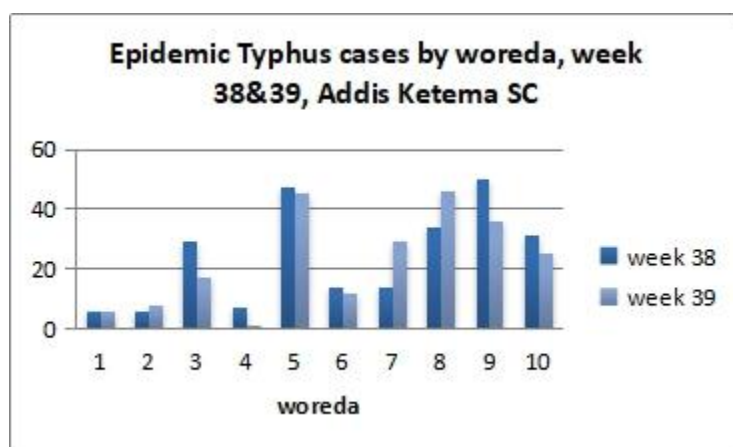


Figure 4-Trends of Epidemic Typhus Cases by woreda, Addis Ketema sub city, week 38 and 39, 2017.

G. Malnutrition

A total of four cases with nutritional deficiency were reported in this week. All of them were diagnosed as MAM.

H. Maternal Death

No maternal death was reported in week 39 of 2017.

I. AWD

No AWD cases were reported in this week.

J. Measles

No measles case was reported in this week.

K. Other disease conditions

In the current epi week AFP, NNT, SARS, Anthrax, rabies, Guinea worm, VHF, Yellow fever and other immediately reportable diseases were reported 0.

4. Recommendations

- The completeness of report in all woredas were above the WHO cut off value requirement of 80%.
- Since AWD outbreak is still threat for the city, we have to strengthen health facilities case detection and zero report.

Community Based Surveillance

- ✚ In week 39 community-based surveillance report completeness for all extension professionals under all woredas were 83% that is out of 94 health extension professionals only 78 were reported weekly report which is above the previous epi week. The completeness of UHEP were above the WHO minimum cut off value (80%).
- ✚ In the current week based on the report the community surveillance all immediately and weekly reportable diseases were zero.

Recommendation for the CBS

- ✚ In week 39 the completeness of report of UHEP were above the WHO cut of value. It shows good progress but it still needs improvement therefore all concerned bodies should work together to strengthen the case detection rate at the community level
- ✚ The community surveillance should also be alert in case detection and zero report of AWD.

II-Weekly Epidemiological Bulletin: Week 40 (October 2 - 8/2017)

Highlights of the week 40(22-28/01/10 E.C)

- In this week 92% of health facilities provided surveillance data. Zero report was sent by 79% of health extension professionals. Completeness and Timeliness for woredas were 100% and 90% respectively.
- Two new SAM cases and six MAM cases were reported in week 40 of 2017.
- From the total of 8 malaria suspected fever cases two were confirmed in week 40.
- No relapsing fever case was reported in week 40 of 2017.
- Number of typhoid cases were 292 in week 40.
- Number of epidemic typhus cases were 258 in week 40.
- No AWD case was reported in this week.

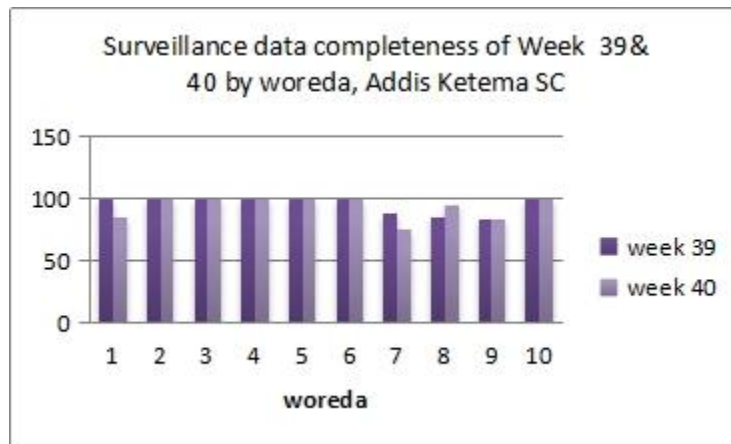
1. Introduction

This weekly epidemiological bulletin serves to provide key information on public health emergency management activities and summarizes surveillance data and performance on epidemic prone diseases and other public health emergencies. The bulletin mainly includes surveillance data of week 40 of 2017 received from woredas through SMS and telephone call. It highlights the surveillance completeness and timeliness across all woredas, trends of diseases under surveillance, cluster of cases and events, ongoing outbreak and responses undertaken at all levels in the sub city.

2. Surveillance report completeness and timeliness.

Completeness and Timeliness.

In week 40 the aggregated surveillance result of completeness and timeliness rate for health facilities under each woreda were 92%. It shows no improvement as compared to week 39. The completeness in all woredas were above the standard value. (see figure 1) Timeliness and completeness for woredas were 90% and 100% respectively.



1. Figure 1. Week 39 and 40 surveillance data completeness by woreda, Addis Ketema Sub city.

3. Diseases and conditions

A. Malaria

From eight suspected malaria cases two of them were confirmed by lab in week 40. Among them all were *P.vivax*.

B. Meningitis

No meningococcal meningitis case was reported in week 40 of 2017.

C. Typhoid fever

A total of 292 typhoid fever cases with no death were reported from all woredas in week 40. The number of cases were increased as compared to the previous week by 25 cases. When we try to see the distribution of these cases higher number of cases were reported from woreda 8 and 9 (36.3%), followed by woreda 3 (13.3%). These woredas report high number of cases for few consecutive weeks. (see figure 2)

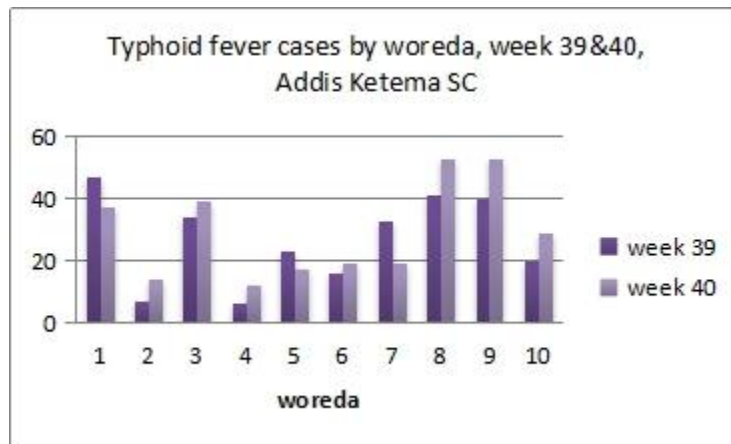


Figure 2- Trends of Typhoid fever cases by woreda, Addis ketema sub city, week 39 and 40, 2017.

D. Dysentery

A total of 27 dysentery cases were reported during week 40. Number of cases were decreased by 15 cases as compared to the previous week. 33.3% of cases were reported from woreda 1. (see figure 3)

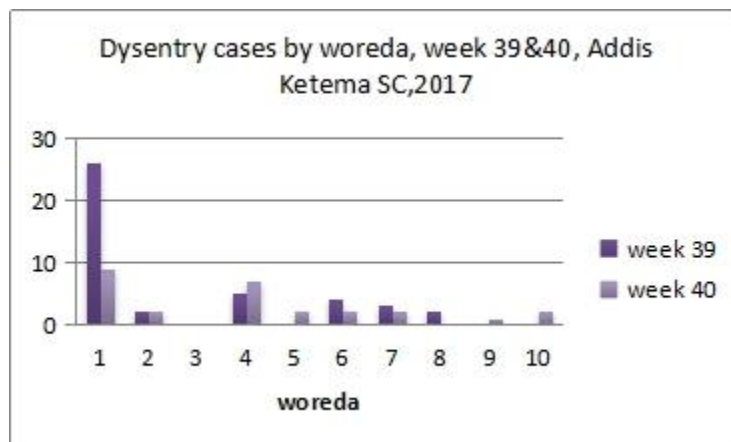


Figure 3-Trend of Dysentery cases in Addis Ketema sub city, week 39 and 40, 2017

E. Relapsing Fever

No relapsing fever cases were reported in week 40 of 2017.

F. Epidemic Typhus

A total of 258 Epidemic Typhus cases were reported during week 40. The number of cases were increased by 33 cases as compared to the previous week. Higher number of cases were reported from woreda 9(25.5%), 5(23.6%) followed by woreda 8(14.3%). (see figure 5)

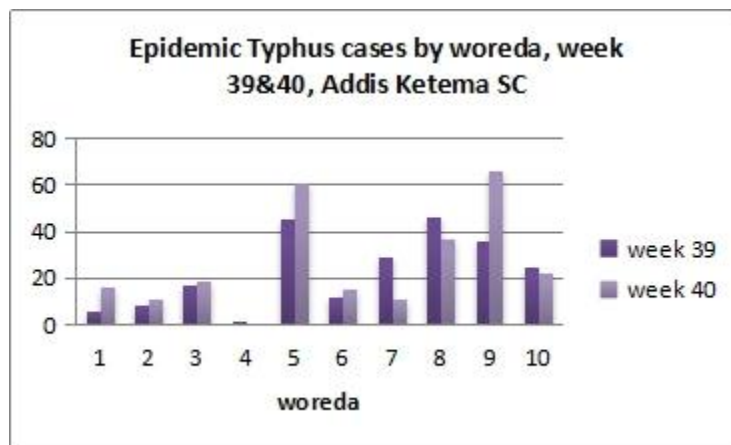


Figure 4-Trends of Epidemic Typhus Cases by woreda, Addis Ketema sub city, week 39 and 40, 2017.

G. Malnutrition

A total of eight cases with nutritional deficiency were reported in this week. Two were diagnosed as SAM and six were MAM.

H. Maternal Death

No maternal death was reported in week 40 of 2017.

I. AWD

No AWD cases were reported in this week.

J. Measles

No measles case was reported in this week.

K. Other disease conditions

In the current epi week AFP, NNT, SARS, Anthrax, rabies, Guinea worm, VHF, Yellow fever and other immediately reportable diseases were reported 0.

4. Recommendations

- The completeness of report in all woredas were above the WHO cut off value requirement of 80%.
- Since AWD outbreak is still threat for the city, we have to strengthen health facilities case detection and zero report.

Community Based Surveillance

- ✚ In week 40 community-based surveillance report completeness for all extension professionals under all woredas were 79% that is out of 94 health extension professionals only 74 were reported weekly report which is below the previous epi week. The completeness of UHEP were below the WHO minimum cut off value (80%).
- ✚ In the current week based on the report the community surveillance all immediately and weekly reportable diseases were zero.

Recommendation for the CBS

- ✚ In week 40 the completeness of report of UHEP were below the WHO cut of value. It shows good progress but it still needs improvement therefore all concerned bodies should work together to strengthen the case detection rate at the community level
- ✚ The community surveillance should also be alert in case detection and zero report of AWD.

Resident Curriculum Vitae (CV)**General**

Name: Afework Melese

Sex: Male

Nationality: Ethiopian

Date of birth: Dec. 02 -1980 G.C

Marital Status: Single

Religion:-Orthodox

Personal Address: Mobile: +251- 913-72-78-60

Office:

E-mail: afaemelese2017@gmail.com

Academic**Background Higher education / University:**

Menilik II Health Science college from 1998-1999 Diploma in Clinical Nursing

Kea Med University college from 2011 -2013 B.S.C Degree in Public Health Officer

Addis Ababa University from Oct. 2016 till now, MPH in Field Epidemiology

Language

Amharic and English

Work Experience

I have been working as clinical nurse (1990-2012) and Public Health Officer (2013-2016) in Addis Ketema Health Center of Addis Ketema sub city.

Computer Skills

Microsoft Office

Epi info

References

Ms. Nebiyat Kassa, Addis Ketema sub city PHEM officer. Cell Phone: +251911770987, Email: nebiyat.kassa@yahoo.com

Prof. Alemayehu Work, Mentors of EFETP, School of Public Health, Addis Ababa University:
E-mail: alemayehuwy@yahoo.com

Mr. Muluken Gizaw, Mentors of EFETP, School of Public Health, Addis Ababa University: E-mail: *muluken.gizaw@yahoo.com*

List of Annexes

Annex 1: AWD OUTBREAK ASSESSEMENT QUESIONNARIES

SECTION A: INTERVIEWER DETAILS

1. Interviewer name ----- 2. Telephone no-----
 3. Presenting Health Facility ----- 4. Date of interview ---- / ---- /

SECTION B: SOCIO DEMOGRAPHIC DATA

5. Serial no/Code: _____
 6. Client Status: 1. Case 2. Control
 7. Age (in years): _____
 8. Sex: M / F _____
 9. Address (Home): Woreda _____ Kebele _____ House No-----
 10. Religious status: 1. Orthodox 2. Muslim 3. Catholics 4. Protestant 5. Others (Specify)
 11. Marital Status: 1. Single 2. Married 3. Divorce 4. Widowed 5. NA (Children)
 12. Occupation: 1. Farmer 2. House wife 3. Government Employee 4. Private Employee
 5. Merchant 6. Student 7. Daily Laborer 8. Other (Specify)_____
 13. Level of Education: 1. No formal education 2. Reading and writing only
 3. Elementary school (1-8) 4. Secondary School (9-12)
 5. Tertiary School (college+)

SECTION C: DETAILS ABOUT ILLNESS

14. Have you get ill with Diarrhea in the past 1 month? 1. Yes----- 2. No----- (If No skip to Q Part D)
 15. If yes to Q.14, Date of onset of diarrhea: DD/MM/YYYY _____
 16. Which of the following symptom(s) is/ are present during the illness?
 1. Watery diarrhea 2. Vomiting 3. General body weakness
 4. Losing of consciousness 5. Abdominal/Muscle cramp 6. Other (specify) _____
 17. Did you visit health facility for this illness? 1. Yes 2. No
 18. If Yes, date seen at health facility? _____ dd/mm/yyyy

SECTION D: CONTACT HISTORY

19. Did you travel anywhere, AWD epidemic in the past 10 days? 1. Yes 2. No

20. If Yes, specify you travel destination: _____

21. Did you have contact with anyone who had journey to AWD epidemic area in the past 10 days?

1. Yes 2. No

22. Did you have any visitors from outside your province of residence in the 10 days before your diarrhea started? 1. Yes 2. No

23. If Yes from where the visitors did come? _____

24. Did you attend any gatherings or events (wedding receptions, festivals, funerals, church gatherings, etc.) within 10 days before your diarrhea started? 1. Yes 2. No

SECTION E: DATA ON SOURCE OF WATER AND FEEDING PRACTICE

25. What is/are the source of water for your household consumption like drinking, cooking,

cleaning etc.? 1. Pipe water 2. Spring 3. Well 4. Pond 5. Surface water 6. Others (specify)

26. What type of container are you using to fetch water from the source and for storage in your house?

1. Jerry cane 2. Bucket 3. Ensira (Gan) 4. Other(specify) _____

27. How was the water accessed from the storage container?

1. Pour 2. Dip with cup 3. Other (specify) _____

28. Does the container have cover/lid (observe)? 1. Yes 2. No

29. For how long do you use the stored water? _____ days

30. Do you clean your water containers regularly? 1. Yes 2. No

31. If Yes for Q. 30, what materials do you use to clean the containers?

1. Soap 2. Only water 3. Ash 4. Other(specify)

32. Do you purify the water? 1. Yes 2. No

33. What methods of water purification do you use?

1. Boiling 2. Filtration 3. Sedimentation 4. Water chemicals (Wuha agar, Bishan Gari)

5. Other(specify)_____

34. What is the cultural food in your area?

1. Enjera with wot 2. Porridge 3. Bread 4. Other(specify) _____

35. Have you ever eaten any food or drink outside your home within the past 7 days prior to your illness? 1. Yes 2. No

36. If yes, what type of food/drink do you consumed (specify) -----.

37. Do you eat raw/uncooked food in the past 48 hours (before the illness)? 1. Yes 2. No

38. If yes, what raw/uncooked food do you eat? [Indicate the correct response(s)]

1. Meat 2. Fruit 3. Vegetables 4. Fish meat 5. Milk and milk products 6. Other(specify)

39. Where do you keep the cooked food?

1. Room temperature 2. Refrigerator 3. Other(specify) _____

SECTION F: DATA ON LATRINE USE AND WASHING

40. Do you have a latrine? 1. Yes 2. No

41. If Yes, what type is it? 1. Pit latrine 2. Flash toilet 3. Others (Specify) _____

42. If No, where do you use as a toilet?

1. Open field 2. Common toilet in compound 3. Public latrines 4. Other (Specify) _____

43. Do you have a practice of washing your hands after toilet use? 1. Yes 2. No

44. If yes, what items are you using for hand washing? 1. Soap 2. Ash 3. Plain water
4. Other(specify)_____

45. Do you have a habit of washing your hand before preparing or/and eating food?

1. Always 2. Sometimes 3. Never 4. Other, Specify_____

46. What items are you using for hand washing?

1. Soap 2. Ash 3. Plain water 4. Other (specify)_____

SECTION G: DATA ON KNOWLEDGE AND PRACTICE:

47. Have you ever heard about acute watery diarrheal disease? 1. Yes 2. No

48. If Yes, from where/whom did you get this information?

1. Health Workers (or HEW) 2. Mass Media 3. Family members 4. Neighbor 5. Others _____

49. Do you know how people acquired AWD disease? 1. Yes 2. No

50. How do you think acute watery diarrheas transmit from person to persons?

1. Contaminated food 2. Contaminated water 3. Contact with patient 4. Other(specify) _____

51. What do you do when you get sick of acute watery diarrhea?

1. Go to health facility 2. Seek traditional healer 3. Use ORS 4. Use holy water 5. Other(specify)

52. Do you think AWD is preventable and curable disease? 1. Yes 2. No

53. How do you prevent AWD?

1. Using toilet 2. Eating cooked food 3. Using purified water 4. Hand washing 6. Other(specify)

Annex 2. Dire Dawa Administration RHB 2010 EFY Facility Information, Eastern Ethiopia.

No	Operational Woredas		Total Catchment Population 2009 EFY	Location	2010 Growth Rate	Estimated Catchment popn 2010 EFY	Population Conv. Factor	Estimated HH Size 4.5
1	Legehare Operational Woreda Catchment		134,372			138,004		29,860
	Legehare Health Center (Kebe 07 & 08)	HC	70,900	Urban	0.0270302	72,816	0.2306 (07Keb)	15,756
	Gende Gerada Health Center (Keb 09)	HC	58,899	Urban	0.0270302	60,491	0.2971 (08Keb)	13,089
	Legedol/Leghare	hp	4,573	Rural	0.0270302	4,696	0.438 (09Keb)	1,016
	Sub Total,	2Hc & 1Hp	0				0.034	
2	Sabian Operational Woreda Catchment		66,888			68,696		14,864
	Sabian Primary Hospital (Kebe 02)	HC	36,869	Urban	0.0270302	37,865	0.879	8,193
	Goro Health Center	HC	21,921	Urban	0.0270302	22,514		4,871
	Boren Dejen	Hp	8,098	Rural	0.0270302	8,317	0.121	1,800
	Sub Total	2Hc ,1Hp	0					
3	Diredawa Operational Woreda Catchment		27,031			27,761		6,007
	Dire Dawa Health Center (Kebele 03)	HC	27,031	Urban	0.0270302	27,761	1.000	6,007
4	Melkajebdu Operational Woreda Catchment		30,775			31,607		6,839
	Melka Jebdu (Kebe 01)	HC	16,060	Urban	0.0270302	16,494	0.522	3,569
	Goladen	Hp	1,085	Rural	0.0270302	1,114	0.035	241
	Gedenser	Hp	951	Rural	0.0270302	976	0.031	211
	Adiga Felema	Hp	2,476	Rural	0.0270302	2,543	0.080	550
	Hula Hulul	Hp	4,043	Rural	0.0270302	4,152	0.239	898
	Aselisso	Hp	3,317	Rural	0.0270302	3,406		737
	Gende Rige	Hp	2,844	Rural	0.0270302	2,921	0.092	632
	Hulahulul # 2 (Kirkire)	Hp		Rural	0.0270302	-		
	Sub Total	1Hc & 6Hp	0					
5	Biyo Awale Operational Woreda Catchment		49,076			50,402		10,906
	Biyo Awale	HC	5,257	Rural	0.0270302	5,399	0.107	1,168
	Awale	Hp	9,682	Rural	0.0270302	9,944	0.197	2,152
	Bishan Behe	Hp	4,826	Rural	0.0270302	4,956	0.098	1,072
	Adadda	Hp	7,915	Rural	0.0270302	8,129	0.161	1,759
	Adadda #2	Hp		Rural				
	Belewa	Hp	5,926	Rural	0.0270302	6,087	0.121	1,317
	Beke Hallo	Hp	5,952	Rural	0.0270302	6,113	0.121	1,323
	Bekehalo #2 (Badanan)	HP	-	Rural				-

	Kalicha	HC	2,813	Rural	0.0270302	2,890	0.124	625
	Kortu	Hp	3,253	Rural	0.0270302	3,341		723
	Ayanle Gumgum	Hp	2,155	Rural	0.0270302	2,213	0.044	479
	El Hamer	Hp	1,296	Rural	0.0270302	1,331	0.026	288
	Sub Total	2Hc & 8 Hp	0	Rural				
6	Wahil Operational Woreda Catchement		27,638			28,385		6,142
	Wahil Health Center	HC	6,537	Rural	0.0270302	6,714	0.237	1,453
	Dujuma	Hp	2,362	Rural	0.0270302	2,426	0.085	525
	Halobussa	Hp	4,108	Rural	0.0270302	4,219	0.149	913
	Agamsa	Hp		Rural				
	Hulul Mojo	Hp	4,609	Rural	0.0270302	4,734	0.167	1,024
	Koriso	Hp	1,895	Rural	0.0270302	1,946	0.069	421
	Lege oda Gudunfeta	HC	8,126	Rural	0.0270302	8,346	0.294	1,806
	Sub Total,	2Hc & 5Hp	0					
7	Addis Ketema Operational Woreda Catchement		51,005			52,384		11,334
	Adis Ketema Health Center (Keb 05)	HC	24,524	Urban	0.0270302	25,187	0.481	5,450
	Jelo Belina Health Center	HC	6,854	Rural	0.0270302	7,039	0.259	1,523
	Harlla	Hp	5,828	Rural	0.0270302	5,985		1,295
	Ijeaneni	2 Hp	3,738	Rural	0.0270302	3,839	0.109	831
	Lege Oda Mirga	Hp	7,731	Rural	0.0270302	7,940	0.152	1,718
	Lege Bira	HP	2,330		0.0270302	2,393		518
	SubTotal	2Hc & 4Hp	0					
8	Gende Kore Operational Woreda Catchement		51,635			53,031		11,475
	Gende Kore HealthCenter (Keb 04)	HC	28,813	Urban	0.0270302	29,592	0.558	6,403
	Dechatu Health Center (Keb 06)	HC	22,822	Urban	0.0270302	23,439	0.442	5,072
	Sub Total	2 Hc	0					
9	Jaldessa Operational Woreda Cachement		27,581		0	28,326		6,129
	Jaldessa	HC	6,750	Rural	0.0270302	6,932	0.245	1,500
	Debelay	Hp	2,709	Rural	0.0270302	2,782	0.098	602
	Gerbe Aneno	Hp	4,489	Rural	0.0270302	4,611	0.163	998
	Chire Miti	Hp	6,280	Rural	0.0270302	6,450	0.228	1,396
	Melka Kero	HC	2,542	Rural	0.0270302	2,611	0.092	565
	Kulayu	Hp	1,572	Rural	0.0270302	1,614	0.057	349
	Mude Aneno	Hp	1,129	Rural	0.0270302	1,159	0.041	251

	Legedini	Hp	2,110	Rural	0.0270302	2,167	0.077	469
	Sub Total	2Hc & 6Hp						
	G/Total	2 Hosp, 15 Hc & 34 Hp	466,000			478,596		103,555.56

Annex 3. Scabies Cases Outbreak Investigation Questionnaire

Case Status: Case _____ Control _____

Patient Name _____ Code _____ Data collection date _____

Zone----- Woreda _____ Kebele _____ Gote _____

I. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex	1.Male 2. Female
1.2	Age	Years ____ Months ____
1.3	Resident	1. Urban 2. Rural
1.4	Religion	1 orthodox 2. Muslim 3. Protestant 4. Others
1.5	Occupation	1.farmer 2.civil servant 3. student 4.house wife 5. merchant 6. other
1.6	Educational status	1.
1.7	Marital status	1. Single 2. married 3. divorced 4. Widowed
1.8	Family size	_____
1.9	Is there any sick person with scabies in family?	1. Yes 2. No
1.10	If yes, number of sick person	_____

II. Clinical History of Diseases:

2.1	Do you have any itching or rash in your body?	1. Yes 2. No
2.2	Which sign and symptom did you experience first?	1. Itching 2. Rash
2.3	Date of onset of	1.Itching----- (dd/mm/yy) 2.Rash ----- (dd/mm/yy)
2.4	During at what time the itching intense?	1. At day 2. At night
2.5	Can you see scabies lesion on infected person?	1. Yes 2. No
2.6	If yes, how many is there?	1. Mild (5 or less) 2. Moderate (6-10) 3. Severe (11-49) 4. very severe (50 and more)
2.7	Which body part is mostly affected?	1. Finger webs 2. Ulnar border of the hand 3. Elbow 4. Wrist 5. Anterior axillaries line 6. Umbilicus 7. Inter gluteal area 8. Genital (Male) 9. Inner aspects of thighs 10. Face, palm and sole (Children)

2.8	What type of skin lesion?	1. Nodular 2. pustules
2.9	Is there a filled sore or crusted sore over the scabies lesion?	1. Yes 2. No
2.10	Did you take treatment?	1. Yes 2. No
2.11	If yes, what type?	1. Ivermectin 2. BBL 3. Sulphur 4. permethrin

III. Risk factors

3.1	Did you have been infected Previously?	1. Yes 2. No 3. Unknow
3.2	With whom do you sleep?	1. Alone 2. wife/husband 3. Brother/sister 4. friend
3.3	Has the person whom you are sleeping with contracted scabies	1. Yes 2. No
3.4	How often you take shower	1, 2-3 days 2, weekly 3, more than a weak
3.5	What do you use detergent to take shower?	1. Water only 2. Water with soap 3. other
3.6	Do you wash your clothes?	1. Yes 2. No
3.7	If yes, when do you wash your clothes?	1. Weakly 2. more than a weak
3.8	Have you put on clothes of someone who was diseased in the previous 6 weeks?	1, Yes 2, No
3.9	When do you change your clothes that you wear now?	1. Everyday 2. Weekly 3. more than a weak
3.10	Is there any shortage of water to wash your body and clothes?	1. Yes 2. No
2.11	What is the source of water for your drinking?	1. Pipe 2. Well 3. Spring 4. river

IV. Knowledge of patient on Scabies like illness

1	Do you hear about scabies?	1. Yes 2. No
2	From whom did you heard	1. Friends 2. Family member 3 HEW 4. Teacher 5. Health workers
3	Do you know the causes of scabies?	1. Yes 2. No
4	If Yes? What it is?	_____
5	What are the Signs and symptoms of scabies?	1. Itching 2, skin lesion 3, Don't know 4. Other (specify)
6	How do you think this disease transmit from person to persons?	1, Contact with infected patient 2, sleeping with infected person 3. Don't know 4. Other(specify)-----

Annex 4: Structured Questionnaires for AFP and Acute Malnutrition Case Based Surveillance System Evaluation

No.	Question	Coding Classification
1. Background Information		
1.1	Region	Addis Ababa
1.2	Zone/Sub-city	Addis Ketema
1.3	Woreda	
1.4	Name of Health Facility	
1.5	Respondent Name:	
1.6	Catchment total Population	_____
1.7	Date of data collection	
2. Case Detection and Registration		
2.1	Is there national manual/guide line for surveillance at your office?	1. Yes 2. No
2.2	Do you have AFP and SAM case definition?	1. Yes 2. No
2.3	If yes, is it posted?	1. Yes 2. No
2.4	Does all professionals are aware of it?	1. Yes 2. No
2.5	Do you have rumor log book?	1. Yes 2. No
2.6	If answer for 2.5 is yes did you register rumor and did verification?	1. Yes 2. No
3. Case Confirmation		
3.1	Do your health facility/health office have the capacity to collect sputum, blood/serum, stool or other specimens?	1. Yes 2. No
3.2	Does your woreda/HC have the capacity to transport specimens to a higher- level lab.?	1. Yes 2. No
3.3	Does your Woreda/HC have guide line for specimen collection, handling and Transportation?	1. Yes 2. No

No.	Question	Coding Classification
4. Reporting		
4.1	Did you send AFP & SAM surveillance data to the next level?	1.Yes 2. No
4.2	Did you know national time dead line report for immediately and weekly reportable disease?	1.Yes 2. No
4.3	If answer for 4.2 is Yes , in what time and when did you report to the next level respectively?	_____
4.4	Does your Woreda/HC have access to communication facility?	1.Internet 2. Fax 3. Phone
4.5	How do you send the data to the next level?	1.mail 2. phone 3. others
4.6	When do you expected to send surveillance data to next level?	
4.7	Have you lacked a recommended format in last 6 months?	1.Yes 2. No
5. Data analysis and interpretation		
5.1	Had you trained on AFP & SAM surveillance system?	1.Yes 2. No
5.2	Did you have computer?	1.Yes 2. No
5.3	Is it functional?	1.Yes 2. No
5.4	Did you have computer skill?	1.Yes 2. No
5.5	Did you analyze AFP and SAM surveillance data?	1. Yes 2. No
5.6	Did you use computer to analyze AFP and SAM surveillance data?	1. Yes 2. No
5.7	If the answer for Ques. 5.6 is yes, did you describe data by time, place and person?	1.Yes 2. No
5.8	Did you perform trend analysis of case by time (line graph)	1. Yes 2. No
5.9	Did you have appropriate denominator for data analysis?	1.Yes 2. No
5.10	Did you notify the results of your analysis to the sub-city?	1.Yes 2. No
5.11	Do you have an action threshold for any of country priority disease/ (AFP& SAM ...)?	1. Yes 2. No
5.12	If answer for 5.11 is yes , what is it? (Ask 2 priority disease)	_____case _____% increase
5.13	How often did you analyze collected data? (Daily, weekly, monthly, Quarterly, as needed_____)	_____
6. Outbreak investigation		
6.1	Is there suspected outbreak of AFP & SAM in the last 6months? (Obs. Report and take copies if possible)	1.Yes 2. No

No.	Question	Coding Classification
6.2	If answer for 5.2 is Yes , has your Woreda/HC investigated the outbreak?	1. Yes 2. No
7. Epidemic preparedness		
7.1	Did your Woreda/HC have written plan for Epidemic preparedness and response?	1. Yes 2. No
7.2	Did your Woreda/HC have emergency stocks of drugs and supplies at all time in the last 1 year?	1. Yes 2. No
7.3	Has your Woreda/HC experienced shortage of drugs, vaccines or supplies during the most recent epidemic/outbreak?	1. Yes 2. No
7.4	Is there a budget line or access to funds for epidemic responses?	1. Yes 2. No
7.5	Does your Woreda/HC have rapid response team for the epidemics?	1. Yes 2. No
8. Responses and Controls		
8.1	Has your Woreda/HC have implemented prevention and control measures based on local data for AFP & SAM? (at least for 1 disease)	1. Yes 2. No
8.2	Does your Woreda /HC respond within 48 hrs. Of notification of most recently reported out break?	1. Yes 2. No
8.3	Does your woreda's/HC's rapid response team /Epidemic management committee have evaluated their preparedness and response activities in the last year? (Obs. written report to conform)	1. Yes 2. No
9. Feedback		
9.1	Did you provide Feedback to lower level in the last 6 months?	1. Yes 2. No
9.2	How did you give your feedbacks?	1. Oral 2. Written
9.3	If answer for 9.2 is yes, how often did you provide? (weekly, monthly quarterly biannually, annually)	_____
9.4	Did you receive feedback from higher level in the last 6 months on the data you provided?	1. Yes 2. No
10. Training		
10.1	Did you take training on AFP & SAM surveillance within the last year?	1. Yes 2. No
10.2	How many staffs were trained?	_____

No.	Question	Coding Classification
-----	----------	-----------------------

No.	Question	Coding Classification
11. Supervision		
11.1	Did you conduct supervision in the last 6 months?	1. Yes 2. No
11.2	If answer for 11.1 is yes , how many times did you supervise?	_____
11.3	How often you supervise? (Weekly, monthly, quarterly ...)	_____
11.4	Did you have supervision checklist?	1.Yes 2. No
Surveillance Attributes		
12. Completeness		
12.1	Number of sites expected to report and reported in the last 1month respectively	Exp. Reported _____
12.2	Are all AFP & SAM cases in the last one month from registry was reported?	1.Yes 2. No
12.3	Number of AFP & SAM cases from registry and report format in the last 1 month respectively	_____
13. Timeliness		
13.1	Is the surveillance data Send/come on time?	1.Yes 2. No
13.2	Percentages of HF submit their report on time?	_____
14. Usefulness		
14.1	Did the suspected outbreaks were detected early by the surveillance system?	1. Yes 2. No
14.2	Did the response initiate in a timely manner?	1. Yes 2. No
14.3	Did any epidemiological investigation conduct?	1. Yes 2. No
14.4	For what purposes do you use the surveillance data? (E.g. early warning and routine program monitoring)	_____
15. Simplicity of the system		
15.1	Is the case definition easy?	1. Yes 2. No
15.2	Does the system allow all levels of professionals to fill data?	1.Yes 2. No
15.3	Does the system help to record and report data on time?	1.Yes 2. No

15.4	How long does it take to fill the format?	_____
15.5	How long does it take to have laboratory confirmation?	_____
16. Acceptability		
16.1	Did you believe the surveillance is important for public health intervention?	1. Yes 2. No
16.2	Did you accept the AFP & SAM surveillance system?	1. Yes 2. No
16.3	Do you think the reporting agents accept and well engaged to AFP & SAM surveillance activities?	1. Yes 2. No
16.4	If yes, how many are active participants in your health center/Woreda	_____
16.5	If No, what is the reason for their poor participation in the surveillance activity	_____
16.6	Were all participants using the standard case definition to identify cases?	1. Yes 2. No
16.7	Were all the reporting agents send their report using the current and appropriate surveillance reporting format?	1. Yes 2. No
17. Flexibility		
17.1	Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?	1. Yes 2. No
17.2	Did you think that any change in the existing procedure of case detection and reporting format will be difficult to implement?	1. Yes 2. No
17.3	Is the system easy to add new variables?	1. Yes 2. No
17.4	Is the system easy to integrate with other systems?	1. Yes 2. No
18. Data quality		
18.1	Are all reported forms Complete?	1. Yes 2. No
18.2	Is the recorded data clear to read and understand?	1. Yes 2. No
19. Representativeness		
19.1	Was the surveillance system enabled to follow the health and health related events in the whole community?	1. Yes 2. No

No.	Question	Coding Classification
20. Stability		
20.1	Was any new restructuring affecting the procedures and activities of the surveillance?	1.Yes 2. No
20.2	Was there lack of resources that interrupt the surveillance system?	1.Yes 2. No
20.3	Was there any time /condition in which the surveillance is not fully operating?	1.Yes 2. No

Annex 5: Data collection tools for health profile of Addis Ketema Sub City woreda 3 district.

I. Demographic and other health related data

1. Historical Aspects of the area (if available) (from woreda administrator)

- 1.1. The name, how and why _____
- 1.2. How was the district formed _____?
- 1.3. Any other historical aspect _____

2. Geography and Climate (From woreda Administrator)

- 2.1. Area of the district(Km²) -----
- 2.2. Woreda Boundaries
 - South ----- North ----- West ----- East -----
- 2.3. Altitude _____
- 2.4. Latitude _____
- 2.5. Average Annual rain fall _____
- 2.6. Average Annual temp _____
- 2.7. Land bodies _____
- 2.8. Water bodies _____

3. Population & population Structures (From woreda Administrator)

- 3.1. Demographic information (From woreda Administrator)
 - Total Population size-----
 - Total number of Kebeles/Ketenas-----
 - Male _____
 - Female _____
 - Urban _____
 - Rural _____
 - Sex ratio _____
 - Age structure: - percentage of children < 1yrs ____ <5yrs ____ < 15yrs -----
 - Percentage of old people >65 years _____
 - Women child bearing age(15-49yrs) -----
 - Percentage of pregnant women-----
 - Dependency ratio (under 18 & above 65??) _____

3.2. Religion

Orthodox_____ (-----%); Catholic_____ (-----%); Protestant_____ (--- %); Muslim_____ (_____%) and Others_____ (_____%)

3.3. Ethnic groups/language

Wolayeta----- (----- %); Tigre----- (----- %); Oromo----- (----- %); Amhara----- (----- %); Gurage----- (----- %) and Other----- (----- %)

3.4. Marital status

Single ----- (_____%); Married----- (_____%); Divorced----- (_____%); Widowed----- (_____%) and Separate ----- (_____%)

4. Population Distribution

Table 1. Population distribution by Kebele/Ketena for woreda 3 district of Addis Ketema Sub City, 2009 E.C

S. No	Name of Ketena/Sefere	Male population	Female population	Total	Total households
1					
2					
3					
4					
5					
6					
7					
8					
9					
Total					

Table 61. Population distribution by age in woreda -3 administration, Addis ketema sub city, Addis Ababa, 2009 E.C

Age group	Male	Female	Total	Percent (%)
0-4				
5-14				
15-24				
25-49				
50-64				
65 and above				
Total				

5. Educational coverage

Table 62 Educational coverage in Addis Ketama Sub city, Woreda 3 District. 2009 E.C

S/No	Type of School	Number School	of Owners school		Number of student			No of Teachers by their title			
					M	F	Total	Diplo	Degree	Master and above	Total
			Private	Government							
1.	KG										
2.	Primary										
3.	Secondary.										
4.	Tertiary.										
5.	College										
6.	University										
	Total										

5. Socio economic conditions

5.1. Employment

- Number of people employed_____
- Number of people un employed_____
- Ratio of Employed to un employed_____
- Number of factories in worda-----

5.2. Main source of income

- Agriculture _____ Civil servant _____ Others (specify)_____
- Yearly income per house hold_____
- Average income per capita _____

6. Communication and Utilities

- How many of the health facilities have access to transportation_____ (%)?
- Telecommunication_____ (%)
- Electric power_____ (%)

7. Health sector expenditure and financing resource

From Government

- Annual worda budget -----
- Annual budget Allocated to health sector -----

- Total per capital health expenditure -----
- Annual budget allocation increment percent comparing to the previous year (%)_____

From internal -----

Funds from NGOs

Total -----Purpose_____

8. Water supply

- Total safe water coverage of woreda ----- (----- %)
- Safe water supply coverage by Keble -----
- Kebeles getting safe water ----- (--- -----%)

II. Health System

1.Number of Health Facility

Table 63 Types of health facility which is found in woreda-3 of Addis Ketema sub city, Addis Ababa 2009 E.C

S. No	Type		Total Number		Remark
			Government	Private	
1	Hospital				
2	Health Center				
3	Pharmacy				
4	Drug Stores				
5	Diagnostic Laboratory				
6	Clinics	Small/Primary			
		Medium			
		Higher/Specialty			
Total					

2. Top 10 causes of Morbidity, and Mortality

Table 64. Top ten leading causes of OPD visit (morbidity) in Addis Ketema sub city Woreda 3 district, 2009 E.C

S. No	Adult			Pediatrics		
	Cases	Number	%	Cases	Number	%
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

Table 65. Top ten causes of deaths (mortality) in Addis Ketema sub city Woreda 3 district, 2009 E.C

S. No	Adult			Pediatrics		
	Cases	Number	%	Cases	Number	%
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

3. Vital statistic

Table 66. vital statistics information in Addis Ketama Sub city, woreda 3 administration, 2009 E.C, Addis Ababa.

S. No	Vital Statistics		Year			Remark
			2007	2008	2009	
1	Infant Mortality Rate (IMR) (Total <1 yr. deaths)	Population Size				
		Death				
		%				
2	Child Mortality Rate (CMR) (Total < 15 yr. deaths)	Population Size				
		Death				
		%				
3	Crude Birth Rate (CBR)	Population size				
		Birth				
		%				
4	Crude Death Rate (CDR)	Population size				
		Death				
		%				
5	Maternal Mortality Rate (MMR)	Population size				
		Death				
		%				

4. Health Human resource

Table 67. Human resource distribution woreda 3 health center & health office in Addis Ketema sub city, Addis Ababa, 2009 E.C

S. No	Type	Number		Total	Ratio
		Male	Female		
1	Physicians				
2	Health officer				
3	Laboratory technician/technologist				
4	Pharmacy technician/pharmacist				
5	Nurse				
6	Midwife				
7	Radiologists				
8	Sanitarian/Environmental health				
9	HEWs				
10	Other health workers				
11	Supportive staffs				
	Total				

5. MCH service

5.1 ANC, FP and delivery Service

Table 9. Maternal Health service in Addis Ketema sub city, woreda 3 health center, 2009 E.C

S. No	Description	Coverage (percentage)				Remark
		2006	2007	2008	2009	
1	ANC 1 st					
2	ANC 4 th					
Delivery						
3	Total delivery					
4	Delivery attended by skilled BA					
5	Delivery attended by TBA					
6	PMTCT					
7	Option B ⁺					
8	PNC					
Family planning						
9	Contraceptive long term					
10	Contraceptive short term					
11	Natural methods					

5.2 EPI Coverage

Table 10. Immunization coverage in Addis Ketama Sub city Woreda 3 health center, 2009 E.C

S. No	Description	Coverage (percentage)				Remark
		2006 E.C	2007 E.C	2008 E.C	2009 E.C	
1	BCG					
2	Measles					
3	OPV 0					
4	PENTA 1					
5	PENTA 3					
6	ROTA					
7	PCV 1					
8	PCV 3					
9	Fully vaccinated					
10	TT2+ PW					

6. Prevalence of TB/Leprosy

Table 68. TB/Leprosy in Addis Ketama Sub city Woreda 3 H/C, 2016/2017

S. No	Description	Total Number (or %)
1	Prevalence of TB	
2	Pulmonary TB	Smear positive
		Smear negative
3	Extra PTB	
4	TB detection rate	
5	TB Rx Completion rate	
6	TB cure rate	
7	TB Rx success rate	
8	TB defaulter rate	
9	Death on TB Rx	
10	Total TB patients screened for HIV	
11	HIV prevalence rate among TB cases	
12	Prevalence of Leprosy	

7. HIV/AIDS

Table 69. HIV/AIDS treatment and prevention status in Addis Ketama Sub city, woreda 3 H/C 2009 E.C

S. No	Activities	Male	Female	Total	Remark
1	Total people screened for HIV				
2	VCT				
3	PITC				
4	PMTCT				
5	HIV Prevalence				
6	Total PLWHIV				
7	On ART				
8	On Pre ART				
9	Condom Distribution				
10	Health Education coverage				

Annex 6 Drugs and Medical Supplies to address some health risks

	Description	Unit	Total requirement	Available	Gap
Vaccines	Meningitis vaccine of 50 doses	Vials	60,223	0	60,223
Drugs	Coartem, 24tab blister/pack	Pac/blister	29,621	0	29,621
	Artesunate (rectal)				
	Artesunate (Inj)				
	Artemether IM				
	Quinine (PO), tin of 100	Tin	12,262	0	12,262
	Quinine (IV), ampoules box of 10	Box	709	0	709
	Chloroquine, tins of 1000 tabs	tin	1,012	0	1,012
	Ceftriaxone (1 gm)	vials	25,808	0	25,808
	Oily CAF	vials	38,712	0	38,712
	Doxycycline, tins of 100 tabs	tin	2,817	0	2,817
	Ringer lactate	Pcs	15,964	0	15,964
	ORS, Packs of 1000 sachets	Pack	1,382	0	1,382
	Vit A.100,000 IU tin of 500	tin	25	0	25
	Vit A.200,000 IU tin of 500	tin	25	0	25
Laboratory Supplies	RDT (Malaria) of 25 tests	Box	1,185	0	1,185
	Pastorex (Meningitis) of 25 tests	kit	104	0	104
	LP set	Kit	1,748	0	1,748
	TI bottle	each	1,748	0	1,748
Kits	CTC Kit (AWD)	each	27	0	27
Medical Supplies	Gloves, box of 100	box	500	0	500
	Syringe	Box	1,000	0	1,000
	PPE				

N.B: Available drugs and medical supplies at bureau of health and PFSA, Mekelle branch is either program drugs or procured using regular budget for routine activities.

Annex 7: Mass Nutritional screening coverage for 6-59 months children and PLWs, as of May to Oct. 2017 in selected woredas of Tigray region.

Woredas	Coverage%	GAM%	SAM%	SAM #	Edema(n)	Coverage%	< 23 cm MUAC%
K/Awlaelo	71.9	3.2	0.21	111	0	28	43
A/Wemberta	93.6	1.6	0.06	60	0	88.8	31.4
S/Ts/Emba	70.4	4.08	0.13	117	0	45.5	44
Gulomekeda	46.5	1.03	0.02	7	0	41.4	13.3
Eastern Zone	70.6	2.5	0.1	295.0	0.0	50.9	32.9
R/Azebo	96.1	1.4	0.1	121	0	89.3	8.8
R/Almata	91.9	2.4	0.3	173	0	73.1	6.8
Alaje	88.6	8	0.17	141	0	74.8	7.9
Southern zone	92.2	3.9	0.2	435.0	0.0	79.1	7.8
S/Samre	94.4	7	0.7	650	0	89	20.5
Enderta	80.7	1.98	0.14	103	2	56.9	13.2
H/Wajirat	91	2.98	0.24	242	0	67.8	31
South East zone	88.7	4.0	0.4	995.0	2.0	71.2	21.6
M/Leke	63	5.7	0.09	67	0	65.7	36
T/Abergele	91.1	2.21	0.081	140	0	90.2	15.7
K/Temben	91.1	3.7	0.15	108	5	91.8	31.3
W/Leke	81.3	3.2	0.07	81	1	47.1	40.9
Ahferom	79.9	1.7	0.07	88	0	60.8	20.3
Central zone	81.3	3.3	0.1	484.0	6.0	71.1	28.8
T/Adiabo	83.4	0.9	0.1	66	0	55	11.1
Tselemti	86.9	6.5	0.08	94	0	68.6	29.8
L/Adiabo	32	0.56	0.19	62	0	43	0.04
N/west zone	67.4	2.7	0.1	222.0	0.0	55.5	13.6
Average/total	80.0	3.3	0.2	2431.0	8.0	65.6	21.0

Annex 8: Health facilities with SAM management services in assessed woredas

Woredas	OTP	SC	TFP	# of health facility with OTP	% HF with OTP
K/Awlaelo	22	2	24	22	95.6
A/Wemberta	20	2	22	20	100
S/Ts/Emba	33	3	36	33	100
Gulomekeda	19	2	21	19	95
Eastern Zone	94	9	103	94	97.65
R/Azebo	25	2	27	25	100
R/Almata	19	2	21	19	100
Alaje	23	3	26	23	100
Southern zone	67	7	74	67	100
S/Samre	26	2	28	26	100
Enderta	17	2	19	17	100
H/Wajirat	27	3	30	27	100
South East zone	70	7	77	70	100
M/Leke	25	3	28	25	100
T/Abergele	26	2	28	26	100
K/Temben	31	3	34	31	88.6
W/Leke	34	3	37	34	100
Ahferom	29	2	31	29	100
Central zone	120	10	130	120	97.72
T/Adiabo	24	2	26	24	100
Tselemti	23	2	25	23	100
L/Adiabo	22	1	23	22	100
N/west zone	69	5	74	69	100
Average/total	420	38	458	420	99.1

Annex 9: TFP admission data from May to October in 2016 & 2017

Woredas	May '16	May '17	June' 16	June' 17	July' 16	July' 17	Aug '16	Aug' 17	Sept '16	Sept '17	Oct '16	Oct '17	201 6 total	201 7 total
T/Adiabo	ND	13	ND	6	ND	9	ND	9	ND	9	ND	11	ND	57
L/Adiabo	15	14	12	13	15	13	13	13	14	12	11	12	80	77
Tselemti	ND	21	ND	34	ND	19	ND	21	ND	37	ND	34	ND	166
Ahferom	1	12	2	10	4	23	1	16	1	16	0	11	9	88
W/Leke	ND	8	ND	12	ND	13	ND	13	ND	22	ND	12	ND	80
M/Leke	107	61	93	39	55	24	36	25	42	31	54	28	387	208
K/Temben	21	18	17	22	64	15	24	29	79	22	ND	47	205	153
T/Abergela	22	0	32	1	21	12	2	6	1	39	0	26	78	84
Gulomekeda	3	1	ND	3	6	4	3	ND	4	2	3	ND	19	10
S/Ts/Emba	24	12	17	24	25	27	22	15	28	12	26	24	142	114
A/Womberta	6	4	7	9	26	7	8	11	4	14	29	11	80	56
K/Awlaelo	7	15	14	19	23	7	20	31	23	30	21	13	108	115
Enderta	21	11	27	19	18	19	37	14	37	34	21	20	161	117
S/Samre	ND	ND	ND	ND	31	ND	64	ND	70	ND	11 6	ND	281	ND
H/Wajirat	34	18	40	18	42	27	27	10	47	12	21	29	211	114
Alaje	35	73	32	23	62	40	60	40	29	25	39	25	257	226
R/Azebo	15	17	16	12	28	23	33	15	35	20	35	26	162	113
R/Alamata	30	15	15	ND	26	17	19	20	21	41	25	26	136	119
Total	341	313	324	264	446	299	369	288	435	378	40 1	35 5	231 6	189 7

Annex 10: CMAM quality indicators for SAM management May t Oct in 2016 and 2017

Woredas	2016 % cure	2017 % cure	2016 % DF	2017 % DF	2016 % Died	2017 % Died	2016 % NR	2017 % NR	2016 % others	2017 % Others
T/Adiab	ND	100	ND	0.0	ND	0.0	ND	0.0	ND	0.0
L/Adiab	92.6	94.3	3.7	3.8	0.0	0.0	3.7	0.9	0.0	0.9
Tselemti	ND	97.1	ND	0.8	ND	0.0	ND	0.4	ND	1.8
Ahferom	46.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0	3.3	0.0
W/Leke	ND	97.2	ND	0.0	ND	0.0	ND	0.0	ND	2.8
M/Leke	83.0	89.0	4.1	1.7	0.0	0.0	4.8	0.0	0.0	0.0
K/Temben	84.7	81.3	1.5	4.0	0.0	0.0	2.2	3.3	11.6	11.5
T/Abergela	100.0	85.7	0.0	5.4	0.0	0.0	0.0	3.6	0.0	5.4
Gulomekeda	96.0	89.0	0.0	0.0	0.0	0.0	0.0	0.0	4.0	11.0
S/Ts/Emba	98.8	99.3	0.4	0.0	0.8	0.0	0.0	0.0	0.0	0.7
A/Womberta	94.6	74.6	2.1	4.2	0.0	4.2	0.0	0.0	3.3	17.1
K/Awlaelo	86.8	91.9	2.4	1.6	0.6	0.3	1.9	0.0	9.5	5.6
Enderta	90.0	87.0	0.7	0.0	0.0	0.9	3.1	3.3	6.2	8.8
S/Samre	92.6	ND	0.0	ND	0.0	ND	0.0	ND	7.4	ND
H/Wajirat	91.8	86.2	2.6	3.0	0.5	3.7	1.6	1.7	3.9	5.6
Alaje	94.5	99.6	5.5	0.0	0.0	0.0	0.0	0.4	0.0	0.0
R/Azebo	94.1	99.0	3.7	0.0	0.0	0.0	1.7	0.0	0.5	0.0
R/Alamata	91.5	87.2	0.9	4.5	0.0	0.0	0.0	0.0	9.4	8.3

Annex 11: MAM admission from May- Oct. in the year 2016 & 2017 for visited TSFP woredas of Tigray Region.

Woreda	May		June		July		Aug		Sept		Oct		2016	2017
	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017	2016	2017		
A/Wemberta	285	411	245	481	175	315	238	81	608	506	318	508	1869	2302
S/Ts/Emba	593	654	844	695	637	603	635	553	642	523	568	559	3919	3587
Gulomekeda	84	199	68	214	82	174	120	75	165	188	151	182	670	1032
R/Azebo	246	642	419	642	421	524	442	230	792	224	491	222	2811	2484
Enderta	436	414	382	389	449	497	502	412	700	612	214	595	2683	2919
H/Wajirat	1030	650	1048	725	566	689	866	626	1026	798	443	963	4979	4451
M/Leke	649	3963	293	3733	147	859	427	805	742	750	856	750	3114	10860
T/Abergele	262	583	430	420	408	205	413	546	811	778	456	370	2780	2902
K/Temben	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
W/Leke	1263	637	1023	585	1335	373	1644	71	1296	1862	1221	1598	7782	5126
Ahferom	549	583	474	505	508	263	571	117	917	985	946	752	3965	3205
Tselemti	ND	1031	ND	1083	ND	1222	ND	1173	ND	1372	ND	1207	ND	7088

Annex 12. Rapid Meher Assessment- Health and Nutrition Sector: Region/Zone level Questionnaire

Interviewer name _____

Institution: _____

Interview Date: (dd) ____/(mm) ____/2017 ____

Region: _____

Zone: _____

Main contact at this location:

Name: _____

Position: _____

Tel: _____

SECTION I: SOCIO- DEMOGRAPHIC PROFILE

Population: Woreda total population	M: _____ F: _____	Under 5 _____	Total: _____
	No. of women of reproductive age (age 15-49 yrs.) _____		
	No. of pregnant and lactating 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 _____	

SECTION II: HEALTH PROFILE**2.1. Coordination and management systems**

Is there a PHEM Officers at Regional level?	Yes ☐ No ☐
If yes how money _____	No ☐
Does the RHB/Zone Health Office regularly report PHEM report as scheduled dates?	Yes ☐ No ☐
Observe copies and comment _____	No ☐
Are there PHEM Officers/focal persons at Woreda and HC levels?	Yes ☐ No ☐
If yes how money is there in the woreda level _____	No ☐
If yes how money is there in the HC levels _____	
Do the Woredas, health facilities and HEWs regularly report PHEM report as scheduled dates?	Yes ☐ No ☐
Observe copies and comment _____	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?	Yes ☐ No ☐
Does it include reproductive health? Yes ☐ No ☐	No ☐
Is there accessible emergency response fund for PHEM at regional level?	Yes ☐ No ☐
If yes how much allocated-----	No ☐
2.3. Mention anticipated epidemics (If yes please indicate Zone/Woreda at risk and risk population per anticipated risk: <i>(Use the back side)</i>) _____, _____, _____	Yes ☐ No ☐
2.4. Public Health emergency Management	
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?	Yes ☐ No ☐
If yes specify the no.: Total _____ Male: _____ Female: - _____	No ☐

2.5. 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			
	Doxycycline			
	Ringer lactate			
	ORS			
	Vit A.			
Nutrition supplies	F100			
	F75			
	RUTF			
	Resomal			
	Routine antibiotics at SC/OTP (the list can be annexed)			
	Amoxicillin			

	Sc Rx Kit (First and second line drugs, materials and milk for seven children each)			
	Sc opening kit			
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 2010	No _____ % _____		
	Was there any prevention and control activities?	Yes ☐ No ☐		
	If yes, Mention types of prevention and control activities taken in woreda _____			
	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 _____ n _____			
AWD	Was there AWD epidemic in the last three years			
	(If yes specify date) _____ up to _____			

	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 2010 first quarter, less than one year No _____ Percentage of coverage _____	
	Has SIA been conducted from May 2009- to October 2010 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 November 2017

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						
June						
July						
August						
September						
October						

4.2 Admission and performance of the therapeutic feeding program for SAM management

Month	Total Number of New SAM Admission		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	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.	2008 E.C.	2009 E.C.
May												
June												
July												
August												
	2009 E.C.	2010 E.C.	2009 E.C.	2010 E.C.	2009 E.C.	2010 E.C.	2009 E.C.	2010 E.C.	2009 E.C.	2010 E.C.	2009 E.C.	2010 E.C.
September												
October												

4.3. Availability of therapeutic supplies

	Yes	No
Are there sufficient supplies for 3 months of?		
RUTF		
F100		
F75		
2 nd 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 program 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 (2 nd generation) TSFP woreda?		
Has the Woreda been supported by an NGO in the last 3 months?		

4.7. MAM admission

How money priority 1 woredas are there in the Region/Zone_____

Month	Total MAM admission		Total MAM Cases		Total Number of Food Distribution point in the woreda
	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	
May					
June					
July					
August					
	2009 E.C.	2010 E.C.	2009 E.C.	2010 E.C.	
September					
October					

4.8. Screening

4.8.2. What screening modality is used in the woredas? EOS _____ No of woredas _____, CHD _____ No of woredas _____, Routine _____ No of woredas _____

4.8.3. Vitamin A coverage _____ De-worming coverage _____

4.9. Screening performance for children in the Region/Zone

Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with odema and MUAC <11 cm			# of children with no_odema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children
				#SAM			#MAM		
				MUAC <11 cm	odema	Total			
May									
June									
July									
August									
September									
October									

4.10. Screening performance for Pregnant and lactating Women (PLW) in the Region/Zone

Month	Target PLW	# of screened PLW	Screening Coverage (%)	# of PLW MUAC below 23.0 cm*	% Proxy GAM for PLW
May					
June					
July					
August					
September					
October					

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?

4.13 Are IDPs included in the emergency nutrition response? ?-----

4.14. Are the services accessible particularly for vulnerable groups such as elderly and disabled? If not why not?-----

4.15 Are there systems in place to make referral to relevant service providers when cases are identified with protection concerns?

SECTION V: FLOODING

1. Was there flood disaster in the last 6 months in the **Region /Zone**? Yes ☐ No ☐

1.1. If yes, how many woredas affected _____,

1.2. Mention the names of woredas affected with flood _____, _____, _____, _____,

1.3. If yes, no of population affected _____

1.4. Human Death due to flooding _____ Yes ☐ No ☐,

1.4.1. If yes how many in number _____

1.5. Are there displaced people due to flooding? Yes ☐ No ☐

1.5.1. If Yes, how many _____ PLW

1.5.2. Children <5 yrs _____ <2 yrs _____ <6months _____ 6-23 months _____

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

Annex 13. Rapid Meher Assessment- Health and Nutrition Sector: Woreda Level Questionnaire

Interviewer name _____

Institution: _____

Interview Date: (dd) ____/(mm) ____/2017 ____

Region: _____

Zone: _____ Woreda _____

Main contact at this location: Name: _____ Position: _____ Tel: _____

SECTION I: SOCIO- DEMOGRAPHIC PROFILE

Population: Woreda total population	M: _____ F: _____	Under 5 _____	Total: _____
	No. of women of reproductive age (age 15-49 yrs.) _____		
	No. of pregnant and lactating 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?	Yes ☐ No ☐
How many PHEM officers are there _____	
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?	Yes ☐ No ☐
If yes, Observe copies and comment _____	
Do the health facilities and HEWs regularly report PHEM report as scheduled dates?	Yes ☐ No ☐
If yes, Observe copies and comment _____	
Is there a multi sector Health Emergency/PHEM coordination forum?	Yes ☐ No ☐
If yes how frequently meet? _____	
Is there a Public Health Emergency preparedness and response plan?	Yes ☐ No ☐
Does it include reproductive health?	
Observe and comment _____	
Is there accessible emergency response fund?	Yes ☐ No ☐
If yes, how much allocated and/or by whom allocated _____, _____	

2.2. Morbidity (List top 5 causes of Morbidity) in the year August 2009 to September 2010 EFY (first Quarter)

a. Morbidity below 5 yrs	b. Morbidity above 5yrs
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____
4. _____	4. _____
5. _____	5. _____

2.3. List number of cases/deaths from May 2009 to October 2010 (May- October 2017)

Month	AWD		Malaria		Measles		Meningitis		Other (specify)
	Cases	Deaths	Cases	Deaths	Cases	Death	Cases	Death	

	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	
May																	
June																	
July																	
August																	
	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	
September																	
October																	

2.4. Outbreak?

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?

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 (measles)	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 ☐	
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	Yes ☐ No ☐	

supplies)		
Are there emergency medicines and supplies to support care of rape survivors? (Main shortage (if any): Specify) _____		Yes ☐ No ☐
Is budget allocated for emergency rapid response by the woreda?		Yes ☐ No ☐
How much allocated _____		
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 2010. _____ No _____ % _____	
	Was there any prevention and control activities?	Yes ☐ No ☐
	If yes, what intervention was taken _____	
	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 ☐
	If yes, No _____ % _____	
	Has vaccination been conducted in the past 3 years	Yes ☐ No ☐
	If yes, No _____ % _____	
	If yes: Indicate the date and number of people vaccinated	
AWD	Date _____ No _____ % _____	
	Was there AWD epidemic in the last three years	Yes ☐ No ☐
	(If yes specify date)	
	Latrine coverage _____ No _____ % _____	
	Latrine utilization _____ No _____ % _____	
Measles	Safe water coverage percentage _____ % _____	
	Is there ongoing measles outbreak	Yes ☐ No ☐
	What is the measles vaccination coverage of 2010 first quarter, less than one year No _____ % _____	
	Has SIA been conducted in from May 2009- to October 2010 EFY	Yes ☐ No ☐
	If yes, Indicate the month and number/coverage% 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?

4.15 Are there systems in place to make referral to relevant service providers when cases are identified with protection concerns?-----

SECTION IV: NUTRITION– SAM and MAM Management in the woreda – May to Oct 2017

SAM Management

4.1. Facilities with SAM management in the woreda

Month	Total Number of hospitals	Total Number of Health centers	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									
June									
July									
August									
September									
October									

4.2 Admission and performance of the therapeutic feeding program for SAM management

Month	Total number of new admission of SAM		% of SAM children cured		% of SAM children defaulted		% of SAM children died		% of SAM children non-respondent		% of SAM children other	
	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009	2008	2009
May												
June												
July												
	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010	2009	2010
August												
September												
October												

4.3. Availability of therapeutic supplies

	Yes	No
Are there sufficient supplies for 3 months of?		
RUTF		
F100		
F75		
2 nd 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 HWs have been trained on IYCF Emergency in the Woreda? _____

How many HEWs are there in the woreda? No _____, % _____

How many HEWs have been trained in SAM management? No _____, % _____

How many HEWs have been trained in IYCF Emergency? 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 (2 nd generation) TSFP woreda?		
Has the Woreda been supported by an NGO in the last 3 months?		

4.7. MAM admission

Is this Priority 1 woreda? Yes ☐ No ☐ I don't Know ☐

Month	MAM admission		Total MAM Cases		Total Number of Food Distribution point in the woreda
	2008 E.C.	2009 E.C.	2008 E.C.	2009 E.C.	
May					
June					
July					
August					
	2009 E.C.	2010 E.C.	2009 E.C.	2010 E.C.	
September					
October					

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

Nutritional screening performance for children in the world									
Month	Target Children 6-59 months	# of screened children	Screening Coverage (%)	# of Children with odema and MUAC <11cm			# of children with no oedema and MUAC 11 to 11.9CM	% Proxy GAM for children	% Proxy SAM for children
				MUAC <11 cm	odema	Total	#MAM		
May									
June									
July									
August									
Septem ber									
October									

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					
June					
July					
August					
September					
October					

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?

4.13 Are the services accessible particularly for disabled and elderly? If not why not?-----

SECTION V: FLOODING4.1. Was there flood disaster in the last 6 months in the **Region /Zone**? Yes ☐ No ☐

4.1.1. If yes, how many Kebeles affected _____,

4.1.2. Names of kebeles _____, _____, _____, _____

4.1.3. Population affected _____

4.1.4. Human death due to flooding Yes ☐ No ☐,

4.1.5. If yes how many in number _____

4.1.6 Are there displaced people due to flooding? Yes ☐ No ☐

4.1.7. If Yes, how many PLW _____

4.1.8 If Yes, how many reproductive age women _____

4.1.9 Children <5yrs _____ <2 yrs _____ <6months _____ 6-23 months _____

4.1.10. 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

Annex 14. Questionnaire for KAP assessment of local communities towards scabies prevention and control strategies, Raya-Alamata woreda of Southern Tigray Zone, 2017.

Date data collection _____ Area location/Latitude _____ longitude: _____

SOCIO –DEMOGRAPHY		
S. no	Questions	response
1	Age	###
2	Sex	1. Male 2. Female
3	Education	1. Illiterate 2. Primary 3. Secondary 4. Other ____
4	Occupation	1. Farmer 2. Merchant 3. Other____
5	Marital status	1. Single 2. Married 3. Divorced 4. Other__
6	House hold size/bed room #	_____
7	Religion	1. Christian 2. Muslim 3. Protestant 4. Other____
8	Income source per month Income status 5000+ 1000	###
9	Respondent position in the house hold	_____
Determinants		
1	Do you access water 40 let/individual daily for house hold purpose?	1. Yes 2. No 3. Other__
2	Do you access a water 20 let/individual daily for drinking	1. Yes 2. No 3. Other__
3	How often have bath?	1. Weekly 2. 1-2 weeks 3. More than 2 weeks s

4	Was there any scabies case in your home for the last one month?	1. Yes 2. No
5	If yes, how much in number?	1. One 2. Two 3. More than two
6	Are there any scabies cases in your area in the last months?	1. Yes 2. No
7	Was Health education about scabies given by HEW?	1. Yes 2. No
8	What advices you got from health personnel?	_____
KNOWLEDGE		
1	What is the cause of scabies cases?	_____
2	Where is the preferable site that scabies can resides in your body?	_____
3	What is the mode of transmission for scabies?	1. Person to person contact 2. Through contact with cases 3. From food 4. Cures 5. Don't know
4	How it can be prevented scabies?	_____
5	What are the symptoms of scabies disease?	1. Fever 2. itching 3. Pusy wounds inter finger 4. Fever + Rigors + Headache 5. deformed fingers 6. Other specify
6	What is the possible treatment for scabies disease?	1. Modern medicine 2. Stay at home 3. Traditional medicine 4. Other (specify) _____
7	Do you think that scabies complicated if un treated?	1. Yes 2. No
8	How soon after suspected scabies would you seek treatment?	_____
9	Have you ever heard about scabies prevention and control strategies?	1. Yes 2. No

10	If yes from whom	_____
11	Who is the most susceptible for scabies?	1. <5 years 2. Pregnant 3. 18-45 ages 4. All ages 5. Other(specify) _____
ATTITUDE		
1	Do you think scabies can be prevented by good personal hygiene?	1. Yes 2. No
2	Do you think that scabies can be treated by only modern medicine?	1. Yes 2. No
3	Was scabies cure or caused biological course?	1. Cured 2. Caused biological course
4	Do you believe that scabies transmitted person to person?	1. Yes 2. No
PRACTICE		
1	What is your most practice during scabies epidemic?	_____
2	Do you always use soap & water during washing?	1. Yes 2. No
3	Do you seek modern treatment if your family got scabies?	1. Yes 2. No
4	If someone from your household gets sick, where do you take first?	1. HF 2. Stay at home 3. Traditional healer 4. Other (specify) _____
5	Have you participated in personal hygiene against scabies?	1. Yes 2. No
6	If not, why not?	_____
7	If so, what is your experience in preventing scabies?	_____

