COLLEGE OF HEALTH SCIENCE, SCHOOL OF PUBLIC HEALTH,

ETHIOPIAN FIELD EPIDEMIOLOGY TRAINING PROGRAM (EFETP)

Compiled Body of Works in Field Epidemiology

By

Siyene Yirgalem (BSC)

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

May, 2018
Addis Ababa, Ethiopia

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Approval by Examining Board

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Examiner

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ACRONOMY

AAU	Addis Ababa University
AFI	Acute febrile Illness
AR	Attack Rate
ART	Anti-Retro Viral Therapy
ASAR	Age Specific Attack rate
AURI	Acute Upper Respiratory Tract Infection
AWD	Acute Watery Diarrhea
CDC	Communicable Disease Control
CFR	Case Fatality Rate
CHWs	Community Health Workers
CSA	Central Statistical Agency
DHS	Demographic and Health Survey
E.C	Ethiopian Calendar
EFETP	Ethiopian Field Epidemiology Training Program
EFY	Ethiopian Fiscal Year
EPHI	Ethiopian Public Health Institute
EPI	Expanded Program on Immunization
EPR	Emergency Preparedness and Response
EWRR	Early Warning Rapid Response
FMOH	Federal Ministry of Health
HC	Health Center
HEP	Health Extension Program
HEWs	Health Extension Workers
HFs	Health Facilities
HMIS	Health Management Information System
IDSRI	Integrated Diseases Surveillance and Response
IHR	International Health Regulation

IR	Incidence Rate
IRS	Indoor Residual Spray
ITN's	Insecticide Treated Nets
LLIN	Long Lasting Insecticide Treated Nets
MCV	Measles Containing Vaccine
MOH	Ministry of Health
NGO	Non-Governmental Organization
NNT	Neonatal Tetanus
NOAA	National Oceanic Atmospheric Administration
ONGO	Other Non-Governmental Organization
OR	Odds Ratio
P.f	Plasmodium falciparum
P.v	Plasmodium vivax
PHE	Public Health Emergency
PHEM	Public Health Emergency Management
PMTCT	Prevention of HIV from Mother to Child Transmission
RDTs	Rapid Diagnostic Tests
RHB	Regional Health Bureau
RRT	Rapid Response Team
SNNPR	South Nation Nationality People Region
SRS	Simple Random Sampling
UNICEF	United Nations Children's Emergency Fund
WHO	World Health Organization
ZHD	Zonal Health Department

EXECUTIVE SUMMARY

This document contains two years Field Epidemiology Training Program outputs, to be submitted to school of public health for fulfillment of Master's Degree in Field Epidemiology. This Compiled Body of Work has eight chapters and six annexes. Reports of diseases outbreak investigations, public health surveillance data analysis, surveillance system evaluation, narrative summary of disaster situation report, manuscript, abstracts and an epidemiological protocol presented in eight chapters.

Chapter One: This chapter contains findings of two outbreak investigations. The first outbreak investigation was conducted on an outbreak of Measles in Kolfe Keranyo Sub city, Addis Ababa. The objective of the investigation was to verify the outbreak and asses the distribution and risk factors of the outbreak to implement control measures. We used a descriptive study of the line list followed by unmatched case-control study; we identified 16 cases of measles with male dominance (75%). The outbreak was controlled by conducting vaccination campaign and health education activities. We recommend the health extension worker should enhance the awareness of the community towards measles infection.

The second outbreak investigation was on Scabies outbreak in East Badewacho district of Hadya Zone, SNNPR. We used a cross sectional descriptive study of the line list; we identified 3824 cases of Scabies. Children 5-14 year of age were the most affected age group with an attack rate of 127/1000 population. The outbreak was controlled by giving treatment to both the infested persons and to people who have prolonged close contact and personal hygiene week was declared and performed during outbreak investigation period. We recommend the health Extension worker should enhance the awareness of community and primarily school students to wards scabies infection. They should keep personal hygiene to prevent similar outbreaks.

Chapter Two: Presents report of surveillance data analysis of Malaria in Kolfe Keranyo Sub city. Retrospective record review of the sub city malaria case was used to describe the distribution of malaria cases in Kolfe keranyo sub city. The summary of the findings has shown that A total estimate of 30,289 Malaria suspected fever examined cases and 3,756 confirmed cases were reported in the Kolfe Keranyo sub city from 2012 to2016 Out of confirmed malaria cases 36% were due to Plasmodium Falciparum and 64% due to P. Vivax. There was substantial increase the number of malaria cases from 2012 to 2016, the peak malaria report year was 2016. This needs further study, including burden of malaria in the high lands. The malaria report system shows

significant improvement from year to year. Currently the majority of health facilities are incorporated into the PHEM network but variable should be filled properly in order to analyze all important surveillance indicators properly. (Based on this result, we conducted evaluation of Malaria system in Kolfe keranyo sub city which presented in the next chapter).

Chapter Three: Addresses Evaluation of Malaria surveillance System in Kolfe Keranyo sub city 2017. This chapter aims to answer the systemic reasons of the major gaps identified from the data analysis of malaria surveillance presented at chapter two of this document. The chapter clearly presents the purpose and objectives of malaria surveillance its progress towards its objectives. The surveillance attributes: simplicity, flexibility, acceptability, representativeness, timeliness, data quality, sensitivity, and usefulness of the surveillance system were also assessed and presented in the chapter.

The findings indicated that, The Kolfe keranyo sub city Malaria surveillance system core activities and supportive functions such as the knowledge of the system was found to be 100% at all levels; data reporting was above the recommended standard of 80% at all levels; data analysis, epidemic preparedness and feedback were below the recommended standard. All assigned focal persons were trained, but lower levels lacked modern technologies for data reporting and data analysis. All levels had the recommended standard reporting form. No analysis of malaria diseases surveillance data was done at the Woreda and health center level. All levels had functioning epidemic management committees but there was no standard, regular rapid response team was no at Woreda level, instead, it was activated when needed. The sub city had a regular supervision system at all levels. We recommend Surveillance data should be analyzed, interpreted at woredas and health facility levels. Epidemic committee should be alerted all the time in respect to preparedness and response.

Chapter Four: Describes assessment of Health Profile Description of Woreda 01, Kolfe keranyo Sub city, Addis Ababa City Administration. In the chapter health and health related data of the Woreda populations were evidently presented which is helpful for prioritizing high-flying problems and implement strategies against the major public health problems of the sub city. A detail action plan showing identified problems and with proposed interventions was developed and submitted to the Sub city health office (it is also annexed in this document).

Chapter Five: Presents Scientific Manuscript for Peer reviewed Journals. The manuscript was prepared according to BMC manuscript guidelines. The manuscripts are on "Investigation of Measles Outbreak in Kolfe Keranyo sub city of Addis Ababa.

Chapter Six: Presents Abstracts on "Investigation of Measles Outbreak in Kolfe Keranyo sub city, Addis Ababa, Ethiopia" and "Surveillance Data Analysis of Malaria from 2012-2016 Kolfe keranyo sub city ,2017".

Chapter Seven: Includes the narrative disaster situation report. As part of early warning and vulnerability assessment, the government of Ethiopia has been conducting nationwide human health and nutrition emergency need assessment twice a year in collaboration with different government sectors and development partners. The assessment was conducted to identify potential problems, which need humanitarian assistance. Based on the report from the assessment humanitarian requirement document was developed and shared with potential partners for response. This chapter clearly presents pre-harvest (Meher scission) human health and nutrition need assessment conducted in selected districts of Hadiya, Kembata Tembaro, Seilt and Gurage Zones of SNNP Region. The assessment showed that the assessed areas have a risk of malaria and outbreak of Scabies and both mild and severe malnutrition is increasing sharply which needs a multi- sectoral intervention.

Chapter Eight: Contain an epidemiological protocol entitled "Magnitude of Measles and Risk Factors Associated with Measles among under Fifteen Children presenting to the Health facility of Kolfe Keranyo sub city, Addis Ababa, Ethiopia". Measles cases reported throughout the year in the district and also measles outbreak occurred in 2017 in the district. However, in the same year 2017 the district measles vaccination coverage up to 100%. There was a discrepancy between coverage of measles vaccination and an occurrence of the measles disease. Though the discrepancy would be improved by identifying factors associated to measles case and creating awareness of the population about vaccination. The study will use a facility bases cross sectional study design using, data from under 15 children with measles case who visiting the health facility of Kolfe keranyo sub city.

Annex: In this Document, there are six annexes containing different questionnaires and useful documents used during accomplishing the two years residency outputs.

CHAPTER I - OUTBREAK/EPIDEMIC INVESTIGATION

1.1. Measles outbreak investigation in Kolfe Keranyo sub city, Addis Ababa, January, 2017

ABSTRACT

Introduction: Measles is an acute, highly contagious viral disease caused by measles virus the risk factors for measles virus infection includes: infants who loss passive antibody before the age of routine immunization, children with vitamin A deficiency, immunodeficiency and children who travel to areas were measles endemic or contact with travels to endemic area.

In 2016, there were 89,780 measles death globally. Measles is still common in many developing countries. Particularly in parts of Africa and ASIA estimated 7 million people were affected by measles in 2016. The general objective of this study was to confirm and assess factors associated with measles outbreak and to implement early Measles control intervention in Kolfe Keranyo sub city, Addis Ababa region, 2017

Methods: Applied unmatched case control study with a case to control ratio of 1:2, to identify the possible risk factors of the outbreak. A face to face interview was conducted using structured questionnaire with adults, and care takers for children. Epi- info used to analyses the data.

Result: A total of 16 measles cases with no death were reported from 5/1/17 to 3/3/2017. Age specific attack rate was higher in age group of 0-4. The age range of the case was from 9 months to 28 years with median age 5 years. 12% of the cases were not vaccinated. Active case searching and health education was conducted during the outbreak. Based on the case-control finding: history of travelling prior to two weeks of onset were risk factor for developing the diseases and statistically significant with an OR of 5.492[95%CI= 1.283-23.507, P=0.022].

Conclusion and Recommendation: An outbreak of measles cases occurred in Kolfe keranyo sub city affecting primarily the age group under 5 years. History of travelling prior to two weeks of onset likely contributed to the outbreak. Therefore, the health extension worker should enhance the awareness of the community towards measles infection.

Key Words: - Outbreak Investigation, Measles, Case Control, Kolfe keranyo sub city, AA

Introduction

Measles is an acute, highly contagious viral disease caused by measles virus. This highly contagious virus is transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva. The virus is a member of the genus Morbillivirus of the Paramyxoviridae family (1).

The risk factors for measles virus infection include: infants who lose passive antibody before the age of routine immunization, children with vitamin A deficiency and immunodeficiency due to HIV or AIDS, leukemia, alkylating agents, or corticosteroid therapy, regardless of immunization status and children who travel to areas where measles is endemic or contact with travelers to endemic areas. Malnourished and young children are at higher risk of developing complications and mortality from measles infection (2).

Measles is a systemic infection; the primary site of infection is the respiratory epithelium of the nasopharynx. Two to three days after invasion and replication in the respiratory epithelium and regional lymph nodes, a primary viremia occurs with subsequent infection of the reticuloendothelial system. Following further viral replication in regional and distal reticuloendothelial sites, there is a second viremia, which occurs 5 to 7 days after infection. During this viremia, there may be infection of the respiratory tract and other organs. Measles virus is shed from the nasopharynx beginning with the prodromal until 3 to 4 days after rash onset (3).

Measles can be transmitted from four days before rash onset (i.e., one to two days before fever onset) to four days after rash onset. Infectivity is greatest three days before rash onset Measles is highly contagious. Secondary attack rates among susceptible household contacts have been reported to be 75%–90%. Due to the high transmission efficiency of measles, outbreaks have been reported in populations where only 3% to 7% of the individuals were susceptible. Whereas vaccination can result in respiratory excretion of the attenuated measles virus, person-to-person transmission has never been shown (3).

Rationale for investigating measles outbreak

The suspected measles cases were reported from Kolfe keranyo sub city health office PHEM department on 5/1/2017 so investigation of the outbreak was conducted to facilitate rapid implementation of control measures to reduce the extent of disease spread and associated morbidity and mortality and ensure that virus transmission is interrupted as soon as possible. As the elimination target date of 2020 approaches, timely investigation and response to outbreaks becomes one of the most important measures for reaching elimination.

OBJECTIVE

General Objective

- To confirm and assess factors associated with measles outbreak and to implement early Measles control intervention in Kolfe Keranyo sub city, Addis Ababa region,2017

Specific Objective

- To confirm the existence of measles outbreak.
- To describe the distribution of cases in terms of place person and time.
- To implement control and prevention measures for measles outbreak.
- To identify risk factors of the outbreak.

METHODS AND MATERIALS

Study area: The outbreak investigation was conducted in Kolfe keranyo sub city Addis Ababa region. The sub city has 537, 023 populations. It is located at the western parts of Addis Ababa city Administration 9.6 K.M away from the center of the city. The sub city has 11 functional public health centers, 1 federal hospital, two general and two primary private hospitals, two NGO health centers, two NGO clinics which delivery health care service to the community. According to administrative report, the current coverage of measles immunization is156%. The sub city is administratively classified in to 15 Woredas and Woreda 03and04, are the Woredas in which the current outbreak of Measles happened.

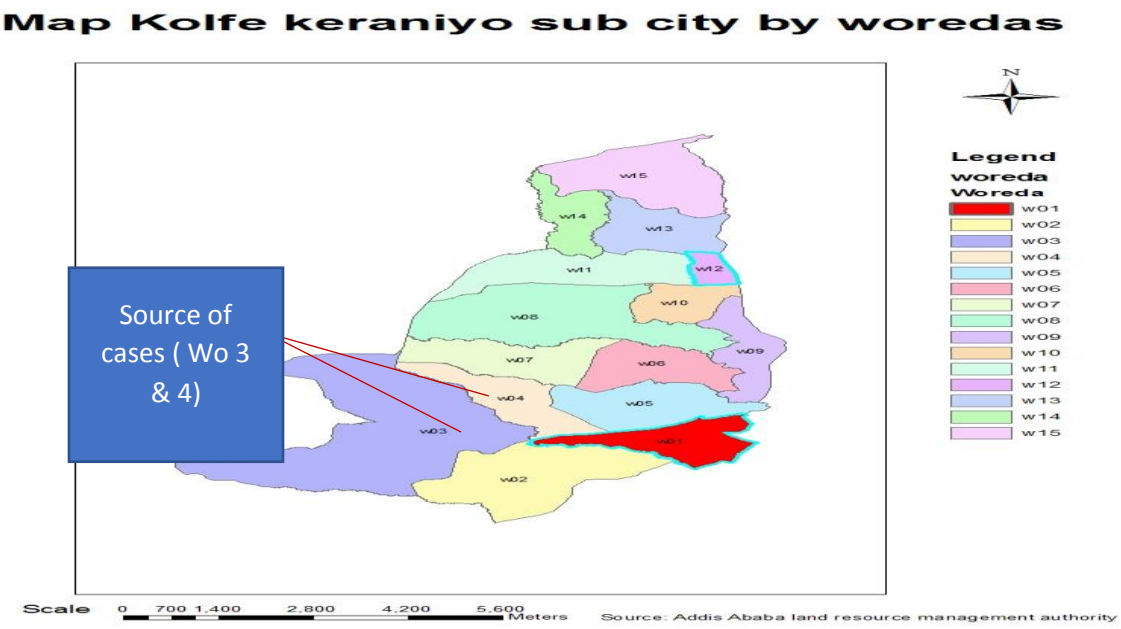

Figure 1: Kolfe Keranyo map showing the main sources of measles cases

Study Period: From 1/1/2017 until the last line listed case was reported.

Study design: Applied unmatched case control study with a case to control ratio of 1:2, to identify the possible risk factors of the outbreak.

Data collection tools and methods

We reviewed the outpatient medical logbooks and medical record of cases at health centers. We also reviewed the laboratory findings of the first three cases. And a line listing of suspected cases was collected from woreda health office to describe the outbreak by place, person and time. A face to face interview was conducted using structured questionnaire with adult cases and controls and care takers in case they are children. Local language was used during the interview with the subjects. Cases was any person with fever and maculopapular (non-vesicular) generalized rash and one of the cough, coryza or conjunctivitis and a control was a neighbor of cases who did not have history of sign and symptoms of measles during the same period.

Operational definition

- **Measles suspected cases at community level**: A community member should report any person with rash and fever to a health worker and also advise the person to go to a health facility.

- **Suspected measles case**: Any person with fever and maculopapular (non-vesicular) generalized rash and one of the cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles.
- **Confirmed measles case**: A suspected case with laboratory conformation (positive IgM antibody) or epidemiological link to confirmed cases in an epidemic.
- **Measles outbreak**: Is laboratory confirmed when 3 or more laboratory confirmed measles IgM -positive cases occur in a health facility or district in a month.
- **Epidemiologically linked case**: A suspected measles case that has not had a specimen taken for serologic confirmation and is linked (in place, person and time) to a laboratory confirmed case; i.e., living in the same or in an adjacent district with a laboratory confirmed case where there is a likelihood of transmission; onset of rash of the two cases being within 30 days of each other.
- **Measles death**: For surveillance purposes, a measles death is defined as any death from an illness that occurs in a confirmed case or epidemiologically linked case of measles within one month of the onset of rash.
- **House ventilation**: A living house consist at least one functional window for air ventilation
- **Knowing modes of transmission**: A person responds the mode of transmission of measles disease from infected person to the uninfected individual via droplet (sneezing, cough)
- **Nutritional status:** Nutritional status of children aged 6- 59 months was determined by measuring the middle upper arm circumference (less than 12 cm is taken as malnutrition).

Variable specification

- **Dependent variable**: Measles infection
- **Independent variables**
    - Measles vaccination status
    - Over-crowding
    - Travel history
    - Contact history
    - Awareness on mode of transmission of measles infection
    - Awareness on prevention/control of measles infection
    - Nutritional status
    - Age and sex

Data Analysis

All collected data are entered and analyzed using statistical software (using epi info-7 and Excel)

During the analyses odds ratio (OR) with 95% confidence interval (CI) was used to assess risk factors association

Ethical Consideration

Before outbreak investigation a formal letter was written by sub city to the affected Woredas health office to get permission and facilitate the investigation process. Before data collection, the purpose of investigation clearly informed and an informed consent was taken from mothers or caregivers, any information related with personal identification was not used on the report.

Data Dissemination

We were prepared written report of soft copies and share, A.A regional health bureau PHEM focal person, Kolfe Keranyo sub city PHEM focal person, to A.A.U school of public health and EFETP mentors.

RESULT

There were 16 Measles suspected case reports since 5/1/2017, 9 cases reported from Woreda 03and 7 cases reported from Woreda 04 of Kolfe Keranyo sub city. Three cases of Woreda 03 and four cases of woreda 04 were confirmed in EPHI National Laboratory. The weekly aggregated data and line lists of Measles cases of the sub city and the Woreda showed a situation of Outbreak. By making discussion with the regional PHEM and sub city PHEM a team was deployed for an investigation and control of the Outbreak.

The team investigated using case-based Measles Surveillance based the reported 6 cases and the 3 Laboratory Confirmed cases. Another 6 cases report found from the Woredas and one case was found by the team during house to house investigation.

Description of the Outbreak

On 5/1/2017 the first case was registered in Woreda 03 health center. The First (Index) case was male, 8 years old, primary school student he was living Woreda 03, Ketena 06. He had no travel history to other place rather than school before the onset of the illness. He received Measles vaccine.

Description of Measles cases by time

The duration of Measles Outbreak was from 5/1/17 to 3/3/2017 with intermittent interventions

Across the Woredas where the cases were occurred.

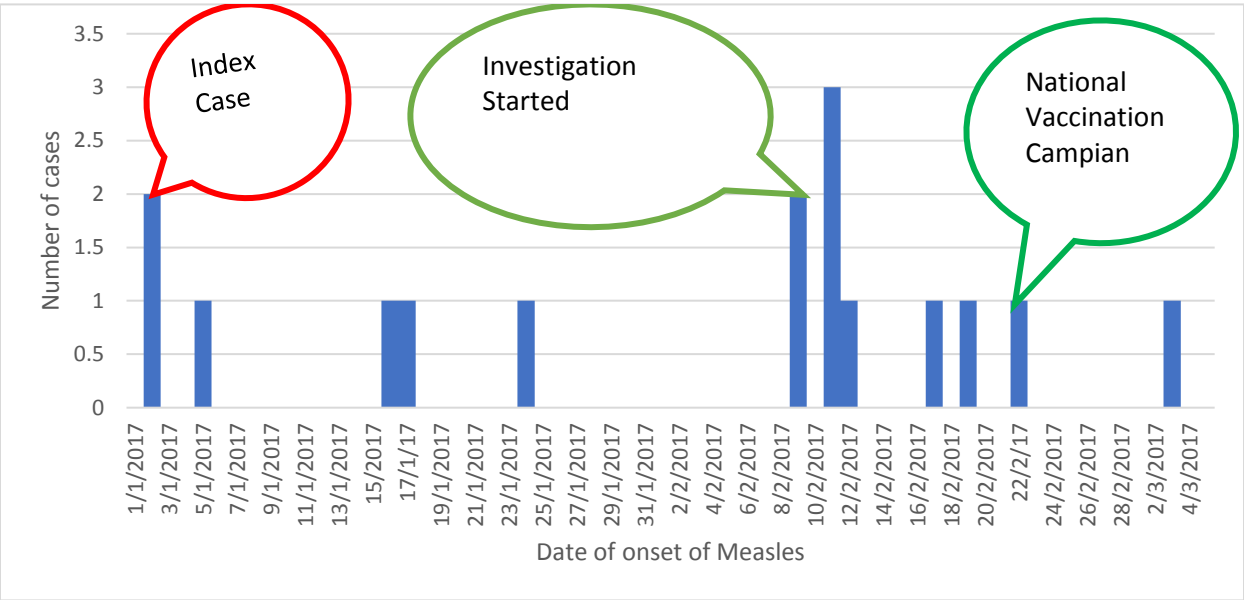

Figure 2: Epi-curve showing distribution of measles cases by date of on set at Kolfe keranyo sub city, 2017

Description of Measles cases by Person

Measles outbreak cases distribution on age group from total 16 cases of which 1(6%) less than 1 yrs., from age one –four group 9 (56%) and age group five - fourteen yrs. 5 (32%) and greater than fifteen yrs.1 (6%). The incidence was highest in age groups one –four which is 23/100.000. The age range of the cases was 9 months to 28 years with mean age of the cases was 5 and the median age is 4. A total of 16 cases register in the line list. Of whom, 4 (25%) were Females and 12 (75%)

were Males. The Crude Attack rate of the sub city, Woreda 03 and Woreda 04 was 3/100,000, 13/100,000 and 11/100,000 respectively with case fatality rate of zero. During the Outbreak period one case had developed complication due to Measles infection.

Description of Outbreak by place

The first case seen in Woreda 03 (Ketena 06) and also majority of the cases were from Woreda 03 9 (56%) with the Attack rate of 13 per hundred thousand followed by Woreda 04 7(44%) with the attack rate of 11 per hundred thousand populations.The ASAR was higher in 0-4 years of age for Woreda 04 with 1.3/1000 population. ASAR was higher in age group of 0-4 years in Woredas that ranges from 0.8/1000 to 1.3/1000 population.

Table 1: ASAR for measles infection among woreda of kolfe keranyo sub city from 5/1/2017-5/3/17

S.no	Name of the Woreda	Total population	1-4 Age		5-14 Age		>15 Age	
			NO	ASAR/1000	NO	ASAR/1000	NO	ASAR/1000
1	Woreda 03	69,847	4	0.8	4	0.34	1	0.06
2	Woreda 04	65,530	6	1.3	1	0.1	0	0

Clinical Characteristics

The most common clinical manifestation seen in the measles cases were Rash (100%), Fever (94%), Cough (94%) and red eyes (25%). Diarrhea (6%) was the complication during the Outbreak.All (100%) cases were visited in the health facilities. Among the Measles cases 94% was treated with Antibiotic, 100% were supplied Vitamin A and 25% were treated with Tetracycline eye ointment

Table 2: Signe and Symptoms of Measles cases in Kolfe Keranyo from 5/1/17-7/3/17

Symptom	Frequency	%
Fever	15	94%
Cough	15	94%
Rash	16	100%
Conjunctivitis	4	25%
Diarrhea	1	6%

Vaccination Status

The Vaccination coverage of the affected Woredas were > 100% for the three consecutive years. But the total Measles case registered in the line list, 2 (12%) of the cases were unvaccinated against Measles. 5 (31%) of the cases received only one dose and 8 (51%) of the case received two doses. The vaccination status of 1 (6%) Measles cases was unknown.

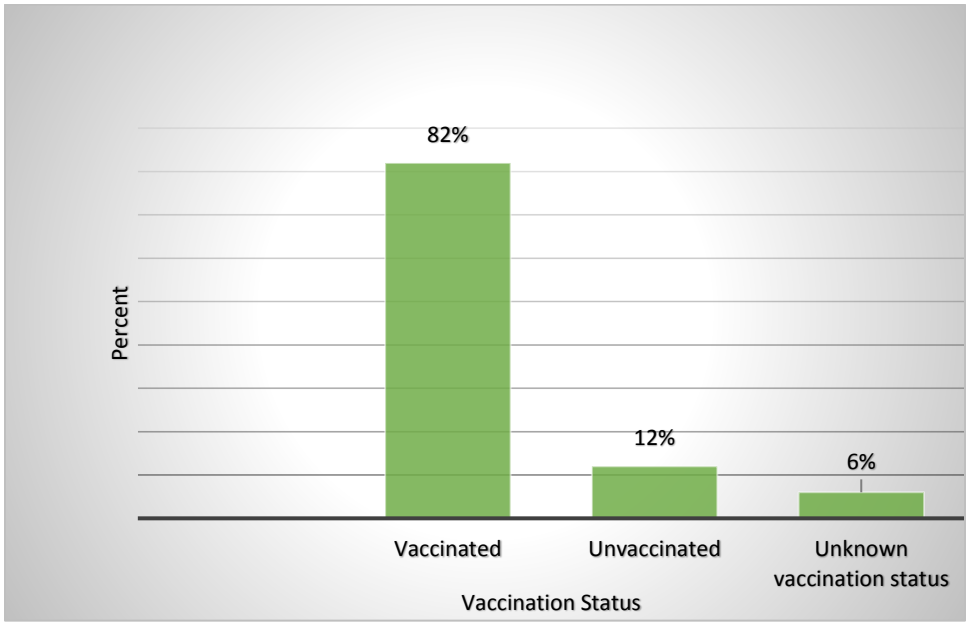

Figure 3: vaccination status of cases in % kolfe keranyo sub city in 2017

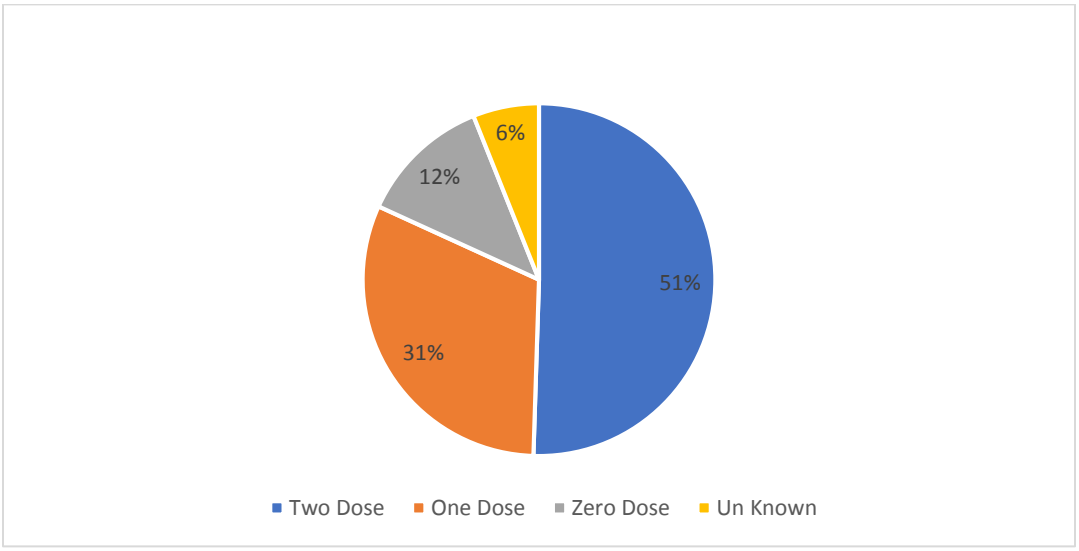

Figure 4: Measles cases received measles vaccine dose in Kolfe Keranyo sub city, 2017

Analytical Study

Table 3: Bivariate analysis of measles outbreaks in Woreda 03 and Woreda 04, Kolfe keranyo sub city, A.A Region, Ethiopia from5/1/2017-3/3/2017.

Variables	Category	Case (n=16)	Control (n=32)	COR (95% CI)
Sex	Male	12	15	0.294(0.078-1.109)
	Female	4	17	
Occupation of the family	House wife	7	13	1.114(0.203-6.105)
	Unemployed	0	7	
	Daily Laborers	4	5	
	Merchant	2	2	
	Government	3	5	
Ethnic group	Oromo	2	6	1.579(0.268-9.308)
	Tigre	0	2	
	Amhara	4	5	
	Other	10	19	
Religion	Orthodox	6	8	0.632(0.168-2.371)
	Protestant	1	5	
	Muslim	9	19	
Education of the family	Illiterate	9	8	0.444(0.063-3.112)
	Read and write	4	13	
	Elementary	1	4	
	Secondary	0	3	
	Above Secondary	2	4	
Vaccination status	Yes	13	23	0.481(0.049-4.755)
	No	2	5	
	Unknown	1	4	
House condition	Ventilated	6	25	0.168(0.045-0.625)
	Not-ventilated	10	7	
Contact history	Yes	7	25	4.592(1.257-16.771)
	No	9	7	
Knowing measles is vaccine preventable	Yes	12	16	0.963(0.859-1.079)
	No	4	16	
Knowing the cause of the disease	Yes	16	30	1.056(0.989-1.129)
	No	0	2	
Distance from the house	Greater than 5km	6	12	1.000(0.290-3.454)
	Less than or equal to5km	10	20	
Travel history	Yes	7	6	5.571(1.476-21.024)
	No	9	26	

By multivariate analysis, history of travelling prior to two weeks of onset were risk factor for developing the diseases and statistically significant with an OR of 5.492[95%CI= 1.283-23.507, P=0.022].

Table 4 : Multivariate analysis of independent factor associated with measles outbreak among in Woreda 03 and 04, Kolfe keranyo sub city, from 5/1/2017-3/3/2017.

Risk factors	Crude OR (95% CI)	Adjusted OR (95% CI)	p-value
Travel history	5.571(1.476-21.024)	5.492(1.283-23.507)	0.022

Laboratory result of the Outbreak

Blood samples were collected from patients in Kolfe Keranyo sub city, in the period 1/1/2017-8/3/2017 and sent to EPHI National Laboratory for conformation. Three specimens were tested positive for Measles IgM. Based on the result of the Laboratory test in the sub city, typical measles manifestation and epidemiologically linked with laboratory confirmed case, the outbreak was confirmed and cases treated as measles.

Intervention Conducted

After the team reaches at the affected Woreda, we started an active surveillance of Measles. The team gave a health education on the cases and mode of transmission measles disease in the schools, day-care and inform the mothers or the care giver, to minimize transmission of the virus, suspected cases isolated for four days after the onset of rash and conducted awareness raising and sensitization of health extension workers and school teachers. We observed the vaccination coverage data and cold chain management of the affected Woreda health facilities, the government health center recording refrigerators temperature regularly including holidays and weekends but the private health facilities were not monitor regularly.

A suspected Measles outbreak was diagnosed and reported to Addis Ababa health bureau. Then the measure given in alert protocol for Measles, namely prevention of transmission of measles infection and monitoring, asses and finding new cases to prevent and control magnitude and severity of measles outbreak infection. And shared information with neighboring sub cities and Oromia region for prevention and response of outbreaks.

The Measles cases were managed by supportive treatment like Antibiotic, TTC, ORS, Vitamin A and Ant pain. The health Extension workers delivered health education for the communities and unfortunately Measles vaccination campaign were conducted nationally of the targeted children between the age group 9 month to 15 years.

DISCUSSION

According to national measles guide line, three or more laboratory confirmed cases were needed to declare an outbreak of measles (8). Therefore, we confirmed the existence of measles outbreak because the first three specimens were tested positive for Measles IgM.

Although Measles morbidity and mortality rate decreased in Africa and Ethiopia, but outbreaks continue to occur (8). The measles outbreak described here line listed 16 cases and zero death.

The investigation showed that the incidence rate of measles the sub city was 3/100,000 which is lower than the national incidence rate of measles (10).

Among the line listed cases, 62% of cases were in age category of less than five years, this was almost similar to outbreak investigated in Oromia Region (6).

In 2017, Ethiopia conducted a nationwide vaccination campaign that showed an impact. Reduction of measles cases was observed by vaccination campaign for the targeted age group similar to what has been described in other African settings (measles investigation Tanzania).

Based on results from the case control part of this study, history of travelling prior to two weeks of onset were risk factor for developing the diseases, which was almost similar to study done in Oromia region (11).

Sixteen suspected measles cases were reported from the sub city, there were no deaths. This is similar the study done in south east Iran (10).

The only effective preventive measure is vaccination with two doses of measles-containing vaccine, usually administered as a measles-mumps-rubella (MMR) vaccine. National vaccine uptake of at least 95% with two doses of MMR vaccine is considered to be necessary to achieve region-wide elimination, with the current childhood two-dose schedule for measles-containing vaccine, large outbreaks of measles are not expected to occur (13). This study showed that only 50% of measles cases received two doses.

Appropriate cold chain management is necessary to maintain the potency of measles vaccine. But based on our observation the cold chain management of the government health facilities were good the refrigerator monitors regularly while that of the private health facilities cold chain management were poor, refrigerator was not monitored regularly on weekends and holidays. Therefore, this poor cold chain management of the sub city private health facilities can have resulted in loss of vaccine potency and might be contribute for the occurrence of the outbreak.

During investigated the outbreak the main limitation was delayed of report and subsequently the investigation was not done at the beginning of the outbreak.

CONCLUSION

An outbreak of measles cases occurred in Kolfe keranyo sub city affecting primarily the age group of under five years. History of travelling prior to two weeks of onset likely contributed to the outbreak the outbreak was controlled by conducting vaccination campaign and health education activities.

RECOM NDATION

- The health extension worker should enhance the awareness of the community towards measles infection.
- The Sub city health office should be strengthening the surveillance system on the affected woredas.

REFERENCE

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1.2. Scabies outbreak Investigation in East Badewacho woreda, Hadya zone, SNNPR, November, 2017

ABSTRACT

Introduction: Scabies is the human skin disease caused by an ecto-parasitic infestation of the skin by the human itch mite, Sarcoptes scabiei var. hominis. Scabies is a common public health problem, with an estimated global prevalence of 300 million affected individuals.

In Ethiopia, according to national survey, there was 6.2% of school children with scabies on their arms and 5.6% of orphan school affected by this neglected tropical disease. The main Objective of this study was to describe the distribution of Scabies outbreak and to implement early Scabies control intervention in East Badewacho Woreda, Hadya zone, SNNPR Region 2017.

Methods: We used a cross sectional descriptive study, reviewed the outpatient medical logbooks and medical record of cases at health centers. And a line listing of suspected cases was collected from woreda health office. Excel was used to analyses the data.

Result: 3824 suspected scabies cases reported from 9/10/2017-5/12/2017, 2315(78%) of them were females while 854(22%) were males. Children 5-14 year of age were the most affected age group with an attack rate of 127/1000 population. majority of the cases were from1stChefa kebles 807 (21%) with the Attack rate of 223 per one thousand followed by 2ndKeranso kebles 610(15%) with the attack rate of 91 per one thousand populations and personal hygiene week was declared and performed Treatment of cases including close contacts with benzyl benzoate lotion was done in order to prevent spread of scabies and re-infestation.

Conclusion and Recommendation: An outbreak of Scabies occurred in East Badewacho Woreda. Affecting primarily five to Fourteen years' age category. Majority of the cases were from1stChefa kebles and 2nd`Keranso kebles. The treatment gave to both the infested persons *and* to people who have prolonged close contact and personal hygiene week was declared and performed. The health Extension worker should enhance the awareness of community and primarily school students to wards scabies infection. They should keep personal hygiene.

Key Words: - Outbreak Investigation, Scabies, East Badewacho woreda, Hadya zone

INTRODUCTION

Scabies is the human skin disease caused by an ecto-parasitic infestation of the skin by the human itch mite, Sarcoptes scabiei var. hominis. It usually spreads by direct, 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. Scabies is spread easily to sexual partners and household members. Scabies sometimes is spread indirectly by sharing articles such as clothing, towels, or bedding used by an infected person (1).

It causes considerable morbidity and mortality through direct effects and as a result of secondary bacterial infection. The most common symptoms of scabies are severe itching especially at night and papular skin rash that may affect much of the body or be limited to common sites like inter digital space, flexor of the wrist (2). Scabies is a truly neglected disease, largely absent from the global health agenda, and its huge burden of disease is largely underappreciated (3).

Scabies is a common public health problem, with an estimated global prevalence of 300 million affected individuals. 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. Following the current El-Nino event which affects many countries globally including Ethiopia, drought and extreme water shortage is prevailing in wide area of the country. This has further compromised the already marginal hygiene and sanitation practice of the rural community and give favorable environment for water-borne communicable diseases like scabies, diarrheal diseases etc. According to USA National Oceanic Atmospheric Administration (NOAA) El Nino has an 80% chance of lasting into early spring 2016, and hence, this extended period will escalate the number of vulnerable groups to such diseases. Scabies affects all age groups and both sexes but, the most vulnerable age groups are young children and the elderly in resource-poor communities who are especially susceptible to scabies as well as to the secondary complications of infestation. The highest rates occur in countries with hot, tropical climates, where infestation is endemic, especially in communities where overcrowding and poverty coexist (4,5). In Ethiopia, according to national survey, there was 6.2% of school children with scabies on their arms and 5.6% of orphan school affected by this neglected tropical disease (6).

OBJECTIVE

General Objective

- To describe the distribution of Scabies cases and to implement early Scabies control intervention in East Badewacho Woreda, Hadya zone, SNNPR, 2017.

Specific Objective

- To describe the distribution of cases in terms of place, person and time.
- To implement control and prevention measures for Scabies cases.

METHODS AND MATERIALS

Study area and population

The Outbreak investigation was conducted in East Badewacho district which is one of the 11districts of Hadiya Zone, Southern Nations Nationalities and Peoples (SNNPR) State of Ethiopia. The district has 175,660 populations. Shone town, the district capital, is located at 90 km from Hosaina, the Zonal capital and 115 km from Hawassa city, the Regional capital in the southwest, and 340 km from Addis Ababa, capital city of Ethiopia. Currently, the district has 1 district hospital, 7 health centers, 41 health posts and 21 private clinics which accounts 98% potential health services coverage. The overall water supply coverage of the district was 38%. The district is administratively classified in to 36 Kebeles (1 urban and 35 rulal) and kebeles 1st Chefa, 2nd Kerranso, Gegara,Abuka, A/chalfo, Kumudo, Landa, T/kokere, T/Anbesa, Jarsokutebe, Waldya, W/beniko, Sherko gaferso, M/korga ,Korga beshelo ,Bante wosene, A/angilo,1st Amburese, A/elele and M/jarso are the kebles in which the current outbreak of Scabies happened.

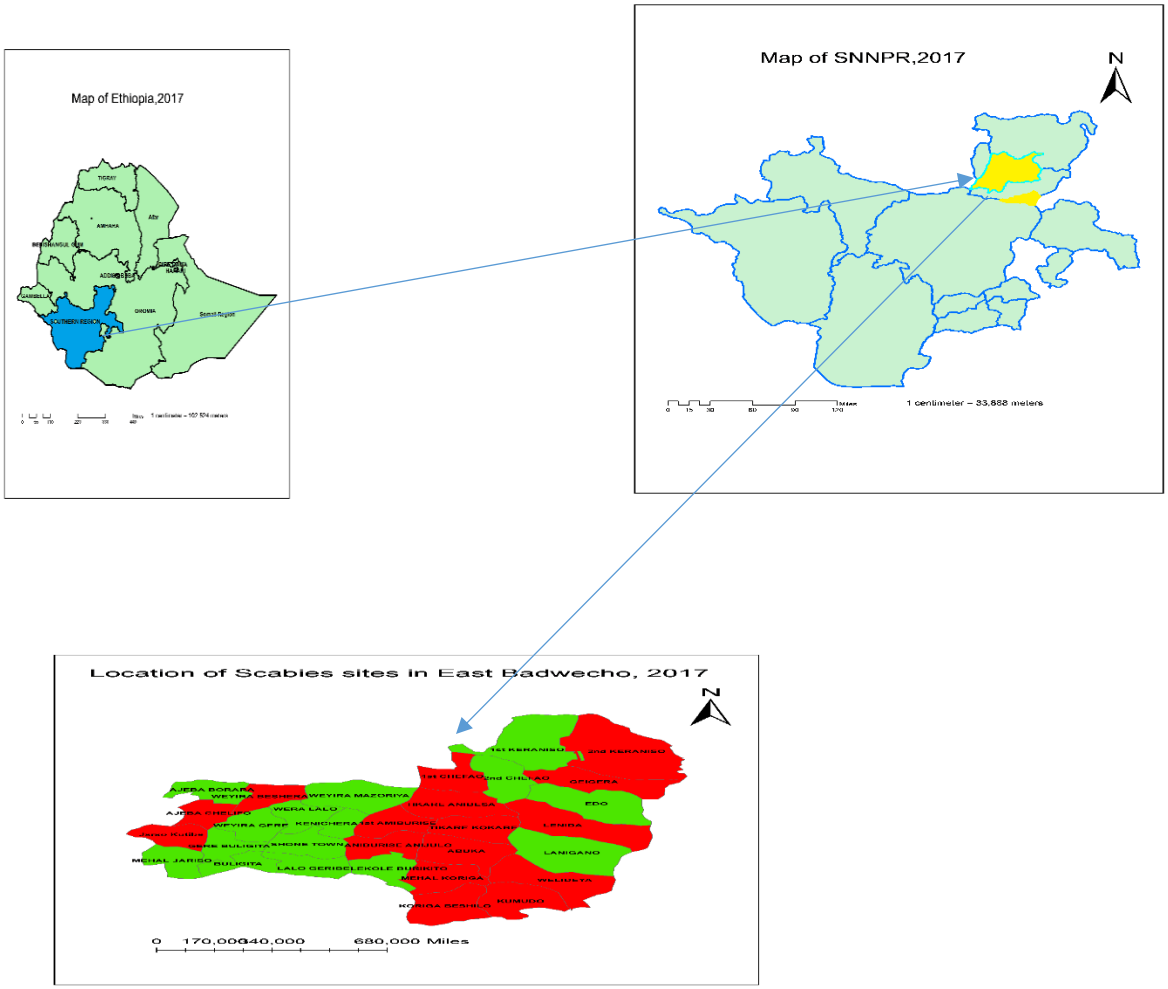

Figure 5: Map of East Badwecho District, Hadiya Zone, SNNPR, Region, 2017

Study Period: The study was conducted from October 9 up to December 5.

Study design: A descriptive cross-sectional study was undertaken the collected line list of cases.

Data collection tools and methods: We reviewed the outpatient medical logbooks and medical record of cases at health centers. And a line listing of suspected cases was collected from woreda health office to describe the outbreak by place, person and time.

Case definition

Suspected case: A person with signs and symptoms consistent with scabies. The characteristic symptoms of a scabies infection include superficial burrows, intense pruritus (itching) especially at night, a generalized rash and secondary infection on the head, face, neck, armpit, elbow, wrist, palms, buttocks and soles.

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

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

Data Analysis: All collected data are entered and analyzed using statistical software (using Excel)

Ethical Consideration

Before outbreak investigation a formal letter was written by Zone to the affected Woreda health office to get permission and facilitate the investigation process.

Data Dissemination

We were prepared written report of soft copies and share to, Hadya zone health bureau PHEM focal person, East Badewacho Woreda PHEM focal person, and A.A.U school of public health and EFETP mentors.

RESULT

There were Scabies suspected reports since 9/10/2017 from 20 Kebles of the district. The line lists of Scabies cases of the Woreda showed a situation of Outbreak. By making discussion with the Zonal PHEM and Woreda PHEM a team was deployed and trace all the affected kebles for an investigation and control of the Outbreak.

Description of Scabies cases by Person

Out of 3824 total suspected scabies cases, 2315(78%) of them were females while 854(22%) were males. The median age was 14 years with ranges from 1 to 67 years. Children 5-14 year of age were the most affected age group with an attack rate of 127/1000 population followed by 15 years and above age groups with an attack rate of 32/1000 population. The overall attack rate of twenty affected kebeles was 97 cases/1,000 populations, with no scabies related death (CFR=0). Most affected populations were children in the primary schools and most of them had shown sign of secondary infection attributable to scabies

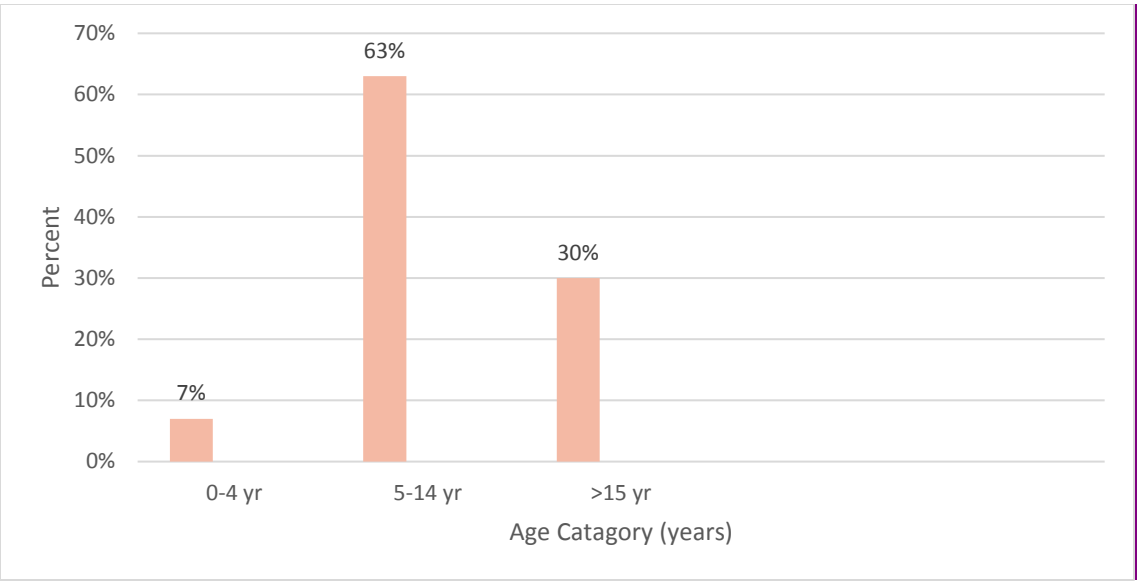

Figure 6: Distribution of Scabies Cases by age in Kolfe Keranyo sub city from 9/10/2017-5/12/2017

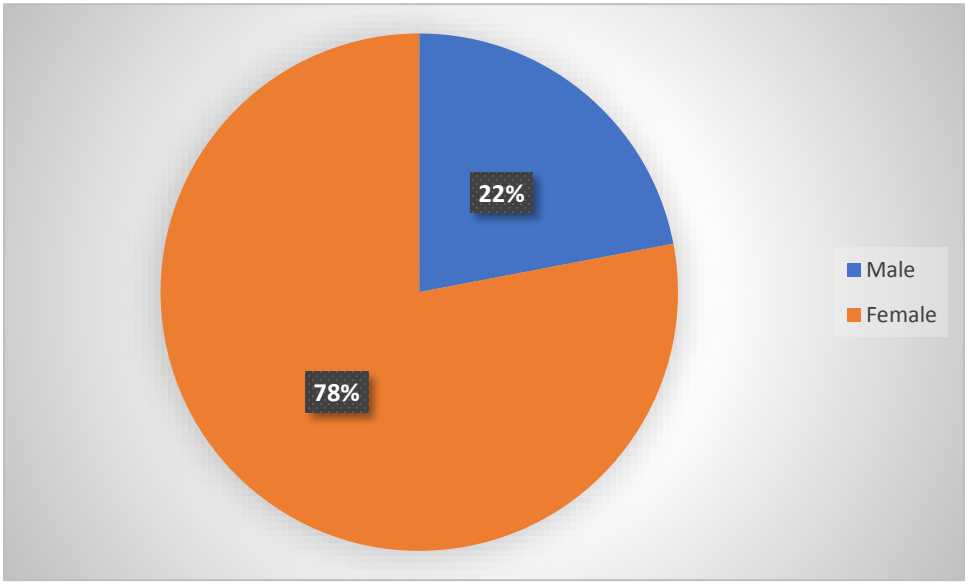

Figure 7: The proportion of Scabies cases by Sex in East Badewacho Woreda from 9/10/2017-5/12/2017.

Description of Outbreak by place

Majority of the cases were from1stChefa kebles 807 (21%) with the Attack rate of 223 per one thousand followed by 2nd`Keranso kebles 610(15%) with the attack rate of 91 per one thousand populations and Garagara kebles 163(4%) with the attack rate of 39/1000 population. Whereas, small numbers of cases were reported from M/ Jarso18 (0.47%) and Jarso kutube kebles 17(0.44%)

Age specific attack rate (ASAR) was highest among the age group of 5 -14 with 227/1000 population in 1stChefa followed by 2nd keranso keble (167/1000 population).

Table 5: ASAR for Scabies among Kebles of East Badewacho Woreda from 9/10/2017-5/12/2017

S.no	Name of the Woreda	Total population	0-4 Age		5-14 Age		>15 Age	
			NO	ASAR/1000	NO	ASAR/1000	NO	ASAR/1000
1	1st chefa	3,890	27	13	667	227	113	69
2	Lanada	3,099	6	3	56	34	13	7
3	Kumudo	2,847	6	2	87	27	10	5
4	2nd Kersamo	6,689	34	11	489	167	87	56
5	T/kokare	4,025	11	5	45	22	18	17
6	T/Anbesa	4,371	7	4	65	18	9	4
7	Gegara	4,121	15	6	103	74	45	22
8	Abuka	5,830	6	1	100	56	60	45
9	A/chalefo	2,345	4	1	248	97	35	19
10	Jarso kutebe	3,654	3	1	10	2	4	3
11	Weldya	2,789	2	1	21	2	6	3
12	W/benko	2,560	0	0	27	2	10	4
13	Sherka gaferso	3,127	8	3	20	2	7	3
14	M/korga	2,900	4	1	21	2	6	3
15	Korga beshelo	3,421	5	1	16	1	5	2
16	Bante wesen	2,012	3	1	45	5	7	2
17	A/anjelo	2,876	9	2	30	4	10	3
18	1stAmeburse	2,543	0	0	19	5	10	4
19	A/Elele	2,675	0	0	80	12	3	1
20	M/Jarso	2,340	0	0	10	2	8	2

Description of Scabies cases by time

On 9/10/2017 the first case was registered. The First case was 11 years' old male who is a primary school student. He came from the adjacent scabies epidemic Woreda West Badewacho Woreda (reported by the students) of Hadya Zone. The outbreak reported to the district health department

on October 25, 2017. The burdens of cases have been increased then after and reached its peak on November 21, 2017.

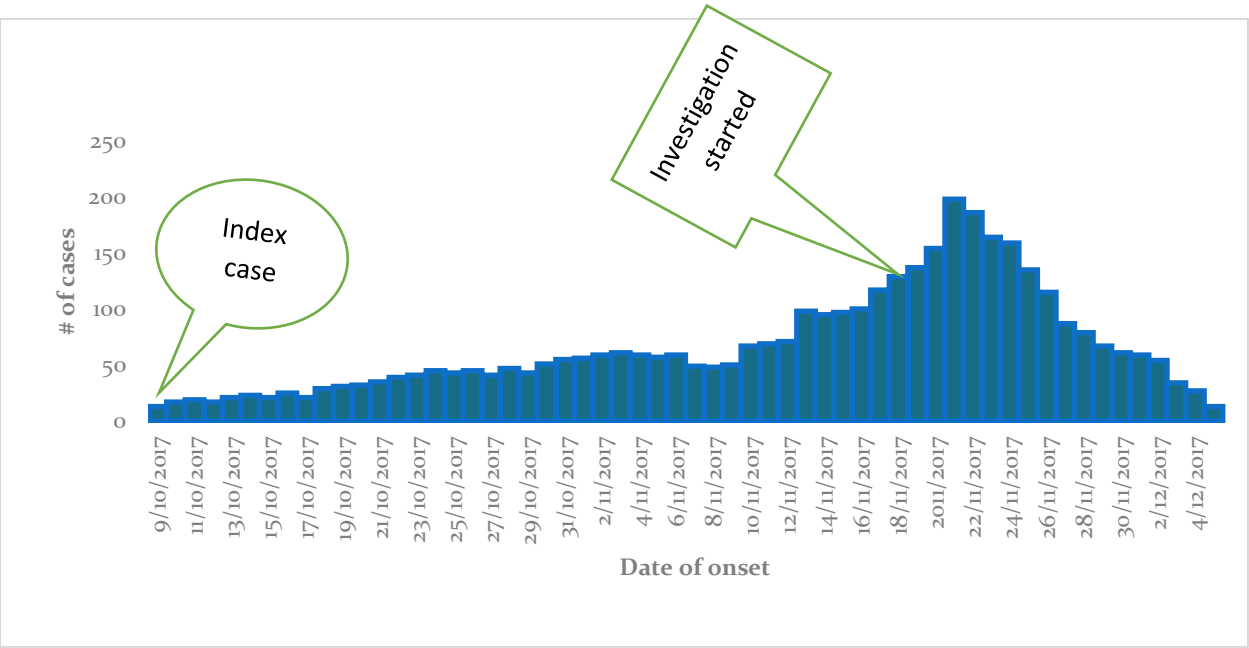

Figure 8: Epidemic curve of scabies outbreak by date of onset, East Badewacho District, Southern Ethiopia, 2017.

Clinical Characteristics

The most common clinical manifestation seen in the Scabies cases were skin Rash (97%), itching (94%), Crusts on the skin (61%) and secondary infection (60%).

Table 6 Sign and Symptoms of Scabies cases in East Badewacho District from 9/10/17-5/12/17

Symptom	%
Skin Rash	97%
Itching	94%
Crust on the skin	61%
Secondary infection	60%

Intervention Conducted

After the team reaches at the affected kebles, the team gave a health education on close follow-up of cases and re-screening, and prompt treatment of new cases. Besides, personal hygiene week was declared and performed during outbreak investigation period. Cases including close contacts treated by benzyl benzoate lotion in order to prevent spread of scabies and re-infestation. Drugs were supplied from shone town health office. Finally, the number of cases decline after the investigation. Social mobilization and community awareness creation would be undertaken using different channels, including, face to face, leaflets, poster, in public gathering, and use of the mass media.

DISCUSSION

We identified a total of 3824 suspected scabies cases line lists from 20 kebeles. Several subnational regions within Ethiopia have been particularly affected by natural disasters such as the El Niño weather phenomenon, leading to severe drought and scabies outbreaks (12).

Children 5-14 years of age were the most affected age group, our findings are similar to studies conducted in Fiji and Cameroon where the school aged children commonly affected (7, 8). Children in primary school were most affected populations, and most of them had sign of secondary infection attributable to scabies. This might be due to the fact that younger children, particularly, those at school are at high risk of scabies infestations as the school environments may increase the susceptibility of cross-infestation, increase contacts which can be passed to family members and other.

When comparing scabies burden by sex, most world regions had an even distribution between males and females. In this study out of the total scabies case, 78% of them were females.

The Woreda water coverage was 38%, the current drought expansion and increased number of water scarce woredas with limited WASH intervention further worsen the disease expansion and severity among the vulnerable (2).

When the prevalence of scabies in affected Kebeles is less than 15%, treatment should be given to both the infested persons and to people who have prolonged close contacts with in the preceding month, such as, household members and sexual contacts. In this study the prevalence of scabies is

12% so did not give the mass treatment. All persons should be treated at the same time to prevent infestation/re-infestation and contain the outbreak. Special at-risk population, among which include persons in schools, prisons, care centers, and childhood institutions will be given due attention during surveillance, case detection, and mass treatment (9).

In this study 60% of cases occurred secondary infection, the complications and secondary effects of scabies cause a huge public health burden yet are generally underappreciated (10). Infestation is frequently complicated by bacterial skin infection, including impetigo, cellulitis, and abscess due to Streptococcus pyogenes and Staphylococcus aureus. Such bacterial skin infections predispose to serious suppurative and non-suppurative sequelae. Scabies infestation provides an important portal of entry for bacteria and promote bacterial growth in vitro (11). Bacterial skin infection predisposes to sepsis and invasive infections complement inhibitors from scabies mites.

During investigated the outbreak the main limitation was the study conducted based on only a clinical signs and symptoms while, lacking laboratory confirmation, ascertainment of cases could be a problem.

CONCLUSION

A total of 3824 cases and zero death were reported throughout the outbreak period. high proportion of cases were found in five to Fourteen years' age category. Most affected populations were children in the primary schools and most of them had shown sign of secondary infection attributable to scabies. Majority of the cases were from1stChefa kebles and 2nd`Keranso kebles. The treatment gave to both the infested persons and people who have prolonged close contacts with in the preceding month and personal hygiene week was declared and performed during outbreak investigation period.

RECOMMENDATION

- Health Extension worker should enhance the awareness of community and primary school students towards scabies infection. They should be keep the personal hygiene.
- The Woreda health office strengthening the surveillance system in most affected kebles.
- The zone administration should give especial attention in the scabies prevention and avail water supply in the Woreda.

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CHAPTER II - SURVEILLANCE DATA ANALYSIS REPORT

Malaria Surveillance Data Analysis-Kolfe Keranyo sub city, A.A, Ethiopia, 2012-2016

ABSTRACT

Introduction: Malaria is a Mosquito born infectious disease affecting humans and other animals caused by the protozoal parasite plasmodium. Human malaria caused by five different species the most severe form is caused by P. falciparum. The disease is wide spread in tropical and sub-tropical regions, in 2015 there were 214 million malaria cases and 438,000 deaths,90% of which occur in Africa. It is one of the main public health problem in Ethiopia, in 2015/2016 a total of Laboratory confirmed plus clinical malaria cases were 2,320,135 and a total of 510 deaths were recorded. The risk of the disease can be reduced by preventing Mosquito bites or with Mosquito control measures such as spraying insect sides and draining standing water. The main objective of this study was to describe the five-year malaria trend of Kolfe Keranyo sub city, Addis Ababa region from 2012 to 2016

Methods: The study population was population of Kolfe Keranyo sub city. The study period covers from 2012 to 2016 and data analysis period from February 22 to March 25, 2017. Retrospective record review of the sub city malaria case was used to analyze the five-year data the data would be analyzed using excel and descriptive data would present using table and figures.

Result: A total estimate of 30,289 Malaria suspected fever examined cases and 3,756 confirmed cases were reported in the Kolfe Keranyo sub city from 2012 to2016.Among these,99.9% were outpatients and 0.01% inpatients. Majority of the cases reported from Woreda 03 and 04. Out of confirmed malaria cases 36% were due to Plasmodium Falciparum and 64% due to P. Vivax. There was substantial increase in the number of malaria cases from 2012 to 2016, the peak malaria report year was 2016, with 24% of the total cases in the five-year period. Average sub city Attack rate of malaria was 1.5 per 1000 population.

Conclusion and Recommendation: In the sub city, P. Vivax rate accounts higher than national. This may be due to migratory patients who may be relapsing of the disease or it may be due to the nature of malaria species. This needs further study, including burden of malaria in the high lands. The malaria report system shows significant improvement from year to year. Currently the majority of health facilities is incorporated into the PHEM network but variable should be filled properly in order to analyze all important surveillance indicators properly.

INTRODUCTION

Malaria is a mosquito born infectious disease affecting humans and other animals caused by the protozoan parasite plasmodium. Human malaria is caused by five different species of plasmodium falciparum, plasmodium malaria, plasmodium ovale, plasmodium vivax and plasmodium Knowleshi (3) Malaria is an acute febrile illness with the sign and symptoms of malaria typically begins 8-25 days following infection. Malaria causes symptoms that typically include fever, fatigue, vomiting, chills, muscular aching and head ach, in severe cases it can cause yellow skin, seizures, coma or death (4).

The malaria parasite is transmitted by female Anopheles mosquitoes. The mosquito bite introduces the parasite from the mosquito saliva in to a person blood. The parasite travel to the liver where they mature and reproduce (5). The most severe form are caused by p. falciparum because p. vivax, p.ovale and p.malaria generally caused a milder form of malaria.(6). Malaria remains a major public health problem, even though it is both preventable and treatable (7).

In 2015, there were 214 million cases of malaria worldwide resulting in an estimated 438,000 deaths,90% of which occur in Africa. (9) The disease is widespread in the tropical and sub-tropical regions, this includes much of sub Saharan Africa, Asia and Latin America (8).

Malaria is commonly associated with poverty and has a major negative effect on economic development. In Africa it is estimated to result in losses of US $ 12 billion a year due to increased health care costs, lost ability to work and negative effect on tourism (10).

Malaria is one of the main public health problems in Ethiopia, in 2015/2016, the total of Laboratory confirmed plus clinical malaria cases was 2,320,135. In particular, the most pattern showed in increase in the first five months of the fiscal year reaching the highest peak in November, followed by a decreased in February and April. A total of 510 deaths were recorded in the same period, with a case fatality rate (CFR) of 0.02% (11).

International traveler advisories specify that Addis Ababa is malaria free however, malaria cases are diagnosed with in the city or with in its growing periphery (12).

The risk of the disease can be reduced by preventing mosquito bites through the use of mosquito nets, or with mosquito control measures such as spraying insect sides and draining standing water. Several medications are available to prevent malaria in travelers to areas were the disease is common (8).

LITERATURE REVIEW

Malaria is a mosquito born disease which, in human, is caused by five protozoa: Plasmodium falciparum, P. vivax, P.malariae, related sibling species of P.ovale, and P.knowlesi. P.Vivax is the most composition of the human malaria, reaching historical latitudinal extremes of 64km norths and 32km souths. (13) Plasmodium vivax transmission is high, among a population with receptive red cell polymorphisms that support P. vivax infection. However, far less is known about the epidemiological distribution or clinical consequences of this parasite compared to P. falciparum. P. malariae and P. ovale are remarkably rare. We have focused on mapping the risks of P. falciparum but there is an urgent need to improve the epidemiological stratification of P. vivax in Ethiopia (12).

Transmission of malaria follows the June – September rains and occurs between September - December while the minor transmission season occurs between Aprils – May following the February – March rains. Areas with bimodal pattern of transmission are limited and restricted to a few areas that receive the small/Belg rains. The major transmission season occurs in almost every part of the country". It describes four major epidemiological strata, a) Malaria free highland areas above 2,500-meter altitude, b) Highland fringe areas between 1,500 – 2,500 meters affected by frequent epidemics; c) Lowland areas below 1,500 meters with seasonal patterns of transmission; and d) Stable malaria areas characterized by all year-round transmission (14).

International travel advisories specify that Addis Ababa is malaria free. However, malaria cases are diagnosed within the city limits as a result of infections acquired outside the city or within its growing periphery. The area of Akaki, now a connected suburb of the greater Addis area, defined transmission during the 1950s and transmission was identified at hot springs located at Fihoha near the railway during the 1940s. For the purposes of risk mapping we have elected to zero risks within densely populated the inner-city limits but allowed the periphery and peri-urban areas the possibility of focal, unstable transmission where altitude or temperature limits support this (12).

The malaria parasite is transmitted by female Anopheles mosquitoes. The mosquito bite introduces the parasite from the mosquito saliva in to a person blood. The parasite travel to the liver where they mature and reproduce. (5) the most severe form are caused by p. falciparum because p. vivax, p.ovale and p.malaria generally caused a milder form of malaria (6).

The risk of disease can be reduced by preventing mosquito bites through the use of mosquito nets and insect repellents, or with mosquito control measures such as spraying insecticides and draining

standing water. Several medications are available to prevent malaria in travelers to areas where the disease is common. Occasional doses of the combination medication sulfadoxine/pyrimethamine are recommended in infants and after the first trimester of pregnancy in areas with high rates of malaria. The recommended treatment for malaria is a combination of antimalarial medications that includes an artemisinin (15).

In 2015, there were 214 million cases of malaria worldwide resulting in an estimated 438,000 deaths, 90% of which occur in Africa (9).

Malaria is one of the main public health problems in Ethiopia, in 2015/2016, the total of Laboratory confirmed plus clinical malaria cases was 2,320,135. In particular, the most pattern showed in increase in the first five months of the fiscal year reaching the highest peak in November, followed by a decreased in February and April. A total of 510 deaths were recorded in the same period, with a case fatality rate (CFR) of 0.02% (11).

Rationale of the study

Malaria is a major public health problem due to climate changes and global warming. Addis Ababa is malaria free however, malaria cases are diagnosing with in the city limits as a result of infection acquired outside the city or with in its growing periphery. Continuous surveillance and data analysis is an important measure to evaluate the trends of malaria in related to intervention measure in controlling and preventing of the disease. It is also becoming national and international concern.

OBJECTIVE

Main Objective

- The main objective of this study is to describe the five-year malaria trend of Kolfe Keranyo sub city, Addis Ababa region from 2012 to 2016.

Specific Objective

- Describe the distribution of malaria over time and place in the sub city.
- To describe the type of malaria in terms of type in malaria, Laboratory result, morbidity and mortality in Kolfe keranyo sub city.
- To strengthen the malaria analysis and monitoring activity in the sub city.

METHODS AND MATERIALS

Study Area: Surveillance data analysis was conducted in Kolfe keranyo sub city, Addis Ababa region. The sub city has 537, 023 populations. It is located at the western parts of Addis Ababa city Administration 9.6 K.M away from the center of the city. The sub city has 11 functional public health centers and 1 Health post, 1 federal hospital, two general and two primary private hospitals, two NGO health centers, two NGO clinics which delivery health care service to the community. The sub city is administratively classified in to 15 Woreda the surveillance system of the sub-city progressed from time to time and it incorporates 15 Woreda under its administration.

Study period: We have collected, analyzed and interpreted secondary data on malaria case for the past five years (2012-2016) from February 22/ 2017 to March 25 /2017.

Study population: The study population was including all malaria cases reported from Kolfe keranyo sub city from 2012 to 2016.

Study Design: Retrospective record review of the sub city malaria case was used to analyze the five-year data of malaria in Kolfe keranyo sub city of Addis Ababa region.

Data source: Five years' secondary data was obtained from PHEM surveillance data of 2012-2016.variables such, time as well as, clinically and confirmed, inpatient, outpatient, P. falciparum and p. vivax, malaria suspected cases and malaria death will have included in the data base.

Sample size and Sampling procedure: All malaria cases, including clinically, confirmed and deaths during 2012-2016 reported to sub city PHEM are included in the study.

Data collection techniques and procedure: The data collection was identifying all malaria cases and deaths in the sub city PHEM the data was included reports of all health facilities in the sub city. All malaria reported cases confirmed and clinically malaria out patient, malaria suspected febrile cases, inpatient and deaths due to malaria would be included in this study.

Data analysis

The five years of data were analyzed by using Microsoft Office Excel 2007 to organize and analyze the data appropriately.

Ethical consideration: Permission approval of the study was obtained from sub city PHEM.

Data quality control: Was carefully cleaned based on PHEM surveillance data with compete variables and verifying the denominator of the data as of Kolfe Keranyo sub city population.

Dissemination of findings

I was Prepare discussion point based on findings and discussed about findings with sub-city staffs, districts, & health centers heads. I was Prepare power point slides about preparation of project proposal; processing and final result of surveillance analysis to academic staffs and batch residents. I was preparing final report and bind it to disseminate, Regional Health bureau and Sub-City health office.

RESULT

In the period 2012-2016 a total of 30,289 malaria suspected fever examined cases and 3,756 confirmed malaria cases were reported in the Kolfe keranyo sub city. Among the total confirmed cases, 3,755 (99.9 %) were out patients, only 1 (0.01%) inpatient and no malaria death reported in the sub city

Table 7: confirmed malaria incidence in 1000, by year in kolfe keranyo sub city, 2012-2016

Year	Confirmed cases	Incidence in 1000
2012	624	1.331
2013	831	1.728
2014	629	1.275
2015	762	1.506
2016	910	1.754

The year with the most reported malaria cases was 2016 with an attack rate of 1.754/1000 followed by 2013 with the attack rate of 1.728/1000.

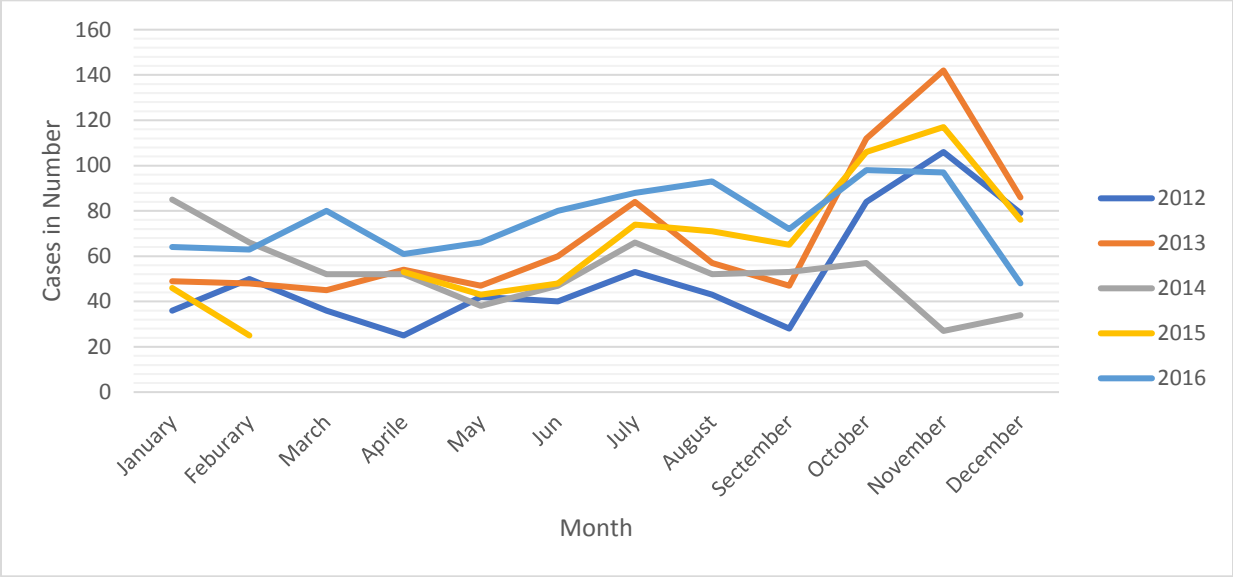

Figure 9: Five-year trends of confirmed malaria by month and year, Kolfe keranyo sub city, 2012-2016

Figure 11 shows that October-December have the most report of malaria in Kolfe keranyo sub city followed by the summer season (Jun- August). Generally, November was the peak of the months with the highest malaria report then October the second and July the third of the total five year confirmed malaria cases reports.

Table 8: Confirmed malaria incidence in 1000, by year and Woreda, Kolfe keranyo sub city, 2012-2016

Woreda	2012	2013	2014	2015	2016
Woreda 01	0.0486	0.065	0.069	0.038	0.050
Woreda 03	0.090	0.097	0.094	0.084	0.091
Woreda04	0.078	0.094	0.088	0.083	0.089
Woreda05	0.057	0.012	0.018	0.025	0.078
Woreda06	0.0715	0.050	0.055	0.050	0.061
Woreda07	0.0446	0.024	0.024	0.085	0.0406
Woreda08	0.0473	0.013	0.053	0.011	0.058
Woreda 09	0.0554	0.083	0.063	0.028	0.068
Woreda 10	0.0378	0.036	0.024	0.064	0.049
Woreda 11	0.0245	0.043	0.045	0.021	0.036
Woreda12	0.0431	0.074	0.037	0.023	0.069
Woreda13	0.069	0.086	0.086	0.073	0.082
Woreda15	0.062	0.039	0.049	0.042	0.074
Total cases	624	831	629	762	910

Woreda reports show different magnitude of malaria cases in different years. Woreda 03, Woreda 04 and Woreda 13 reported the greatest number of malaria cases. A total estimate of 3756 confirmed and clinical cases was reported Kolfe keranyo sub city in 2012 – 2016. The majority of cases were in Woreda 03 confirmed malaria incidence 0.091/1000, followed by Woreda 04 confirmed malaria incidence 0.086/1000 and Woreda 13 confirmed malaria incidence 0.744/1000.

Table 9: Confirmed malaria cases and species, Kolfe keranyo sub city, 2012-2016

Year	Total Positive	P. Falciparum	%	P. Vivax	%
2012	624	221	35.4	403	64.5
2013	831	279	33.5	552	66.4
2014	629	237	37.6	392	62.3
2015	762	270	35.4	492	64.5
2016	910	351	38.5	559	61.4

The mean number of malaria cases per year was 751.The sub city annual confirmed malaria cases range between 624 (16.6%) in 2012 and 910 (24%) cases in 2016. Out of the total malaria confirmed cases 1358 (36%) cases were due to P. Falciparum and 2398 (64%) cases were due to P. Vivax. There were no reports other than these two species. P. Vivax is the highest magnitude in the five (2012-2016) years.

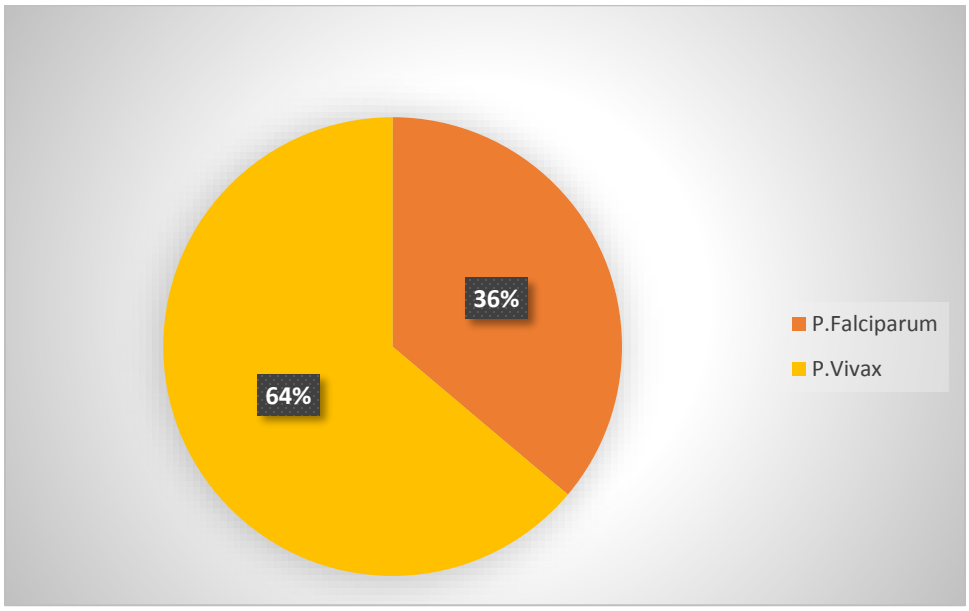

Figure 10: Distribution of malaria cases by plasmodium species in Kolfe keranyo sub city,2012-2016

Indicators show that total confirmed and clinical malaria, total out-patient, total in-patient, suspected febrile cases and total malaria positive case per thousand for each and total malaria causes deaths per 100,000. In all indicators the last two years 2015 and 2016 have highest results than the rest years. That was may be strengthen of the PHEM program.

Table 10 : Total Five-year malaria Attack rate by indicators of Kolfe keranyo sub city, 2012-2016

Indicators	2012	2013	2014	2015	2016
Total confirmed malaria cases/1000	1.3	1.7	1.26	1.5	1.74
Total outpatient malaria cases/100	1.3	1.7	1.258	1.5	1.74
Total Inpatient malaria cases/1000	0	0	0.002	0	0
Total malaria deaths/100000	0	0	0	0	0
Total malaria suspected febrile examined cases/100,000	1640	1400	980	1270	1490
Total P. Falciparum cases/1000	0.46	0.57	0.48	0.53	0.66
Total P. Vivax cases/1000	0.85	1.13	0.78	0.96	1.06

The overall five-year average sub city confirmed reported Attack rate was 1.5 per 1000, which was almost the same as to the out-patient reported cases. The trend of confirmed malaria cases Attack rate increase in the last two years, the highest Attack rate occurred in 2016 (1.74/1000) declining from 1.7 per 1000 in 2013 to1.26/1000 in 2014 then increasing in 2015 (1.5/1000) Total malaria inpatients and total malaria death accounts one and zero respectively. Among the total confirmed cases Plasmodium Falciparum reported average Attack rate was 0.54 per 1000 and P. Vivax 0.95 per 1000 with a case fatality rate of zero.

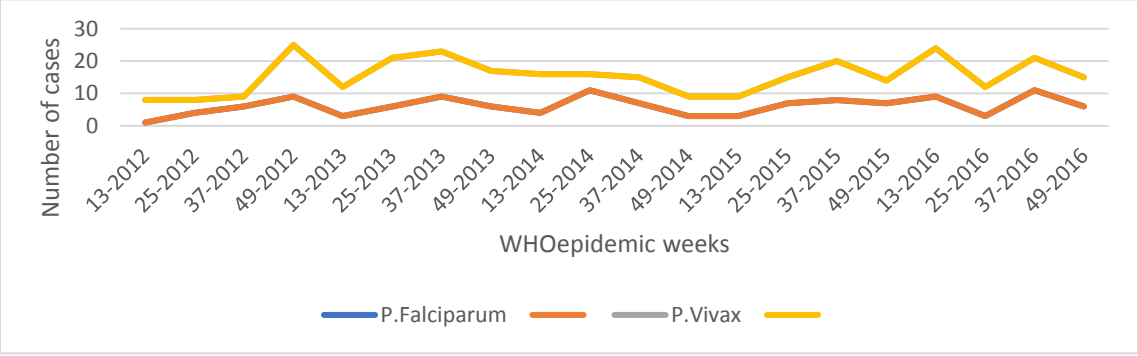

Figure 11: Trends of confirmed malaria cases by species and WHO epidemic weeks, Kolfe keranyo sub city, 2012-2016

Table 11 : Malaria confirmed rate and SPR of Kolfe sub city, 2012-2016

Years	Confirmed malaria cases	%	SPR %
2012	624	16.6	15
2013	831	22	12.3
2014	629	16.7	12.7
2015	762	20	11.5
2016	910	24	12.1

There had been slightly differences in slide positivity in the last five years, ranging the least in 2015 which accounts 11.5% and highest in 2012 which accounts 15%. The average sub city estimation of the slide positivity rate is 12.7% in the period 2012-2016.

DISCUSSION

According to FMH 2016 performance report, in particular, the most pattern showed in increase the malaria cases in the first five month of the fiscal year reaching the highest peak, in November (11). Which is almost the same as this study.

The kolfe keranyo sub city the average malaria case incidence was 1.5/1000 and zero death from 2012-2016, Afar region average confirmed malaria cases incidence and fatality rate was 900/100,000 and 29/100,000. Which is high magnitude of malaria cases and deaths compared to this study. (17)

In the Afar region ratio of plasmodium Falciparum to Plasmodium Vivax 36% and64% respectively in this study that has inverse result with prior studies of 60% and 40% (16). This may be due to migratory patients who may be relapsing of the disease or it may be due to the nature of malaria species

The average sub city estimation of the slide positivity rate is 12.7% in the period 2012-2016.which is parallel to the average five-year (2011-2015) estimation of slide positivity rate in Dire Dawa 12.5% (17).

The report shows increasing of magnitude of malaria from year to year like the PHEM report, but it seems unlikely to the ground of the practical trend of malaria in this sub city, it may be due to the improvement of reporting system rather than increasing of the malaria cases or majority of the

sub city population are migrant from different regional state may be the population travel to malaria endemic area.

LIMITATION OF THE STUDY

- Total malaria suspected febrile illness may not necessarily reflect the actual behavior of the health indicator.
- The data had been lost important variables, including age and sex

CONCLUSION

In the sub city, P. Vivax rate accounts higher than national. This may be due to migratory patients who may be relapsing of the disease or it may be due to the nature of malaria species. This needs further study, including burden of malaria in the high lands. Malaria transmission is characterized by the bi - peak of the season, where the first occurs October up to December and the second season is from the Jun to August, indicating by inclining in malaria morbidity. The malaria report system shows significant improvement from year to year. Currently the majority of health facilities is incorporated into the PHEM network.

RECOMMENDATION

- Sub city should able further Strengthen of routine surveillance by improving quality, capacity and coverage of a surveillance system for estimation of case incidence
- All variable should be filled properly in order to analyze all important surveillance indicators properly
- A further study is needed why the burden of malaria in the high lands.

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CHAPTER III - EVALUATION OF SURVEILLANCE SYSTEM

Malaria surveillance system evaluation – Kolfe Keranyo sub city, A.A, 2016/17

ABSTRACT

Introduction: Public health surveillance is the ongoing, systematic collection, analysis, interpretation and dissemination of health-related event data to help guide public health action and policy development. The main objective of this study is to evaluate the surveillance system of malaria in Kolfe keranyo sub city, and forward solution for improvement

Methods: Cross sectional study was conducted from June 15-30, 2017 in Kolfe Keranyo sub city Addis Ababa region. Purposely selected 3 Woreda health office and data collection would be done by face to face interview using questionnaire/checklist and observation of tools for surveillance and secondary data review and data would be collected by interview and record review processed by using the Microsoft Excel.

Results: - The Kolfe keranyo sub city Malaria surveillance system core activities and supportive functions such as the knowledge of the system was found to be 100% at all levels; data reporting was above the recommended standard of 80% at all levels; data analysis, epidemic preparedness and feedback were below the recommended standard of 80%. All assigned focal persons were trained. All levels had the recommended standard reporting form. No analysis of malaria diseases surveillance data was done at the Woredas and health center level. All levels had functioning epidemic management committees but there was no standard, regular rapid response team was no at Woredas level, instead, it was activated when needed. The sub city had a regular supervision system at all levels.

Conclusions: Public health surveillance system is basic for population wellbeing. According to the evaluation, the system is in place and help full for detection of the diseases and outbreak. Concerning to the reporting format other than weekly report form, case-based report form, line list report form and log books were found adequately. Most of the visited sites have other surveillance manual also seen in most of the health facilities but not for malaria. Concerning to epidemic preparedness and response plan, there was seen only sub city level,

Recommendations: Surveillance data should be analyzed, interpreted at Woredas and Health facility levels. Epidemic committee should be alerted all the time in respect to preparedness and response.

INTRODUCTION

Public health surveillance is the ongoing, systematic collection, analysis, interpretation and dissemination of health-related event data to help guide public health action and policy development. The main aim of a surveillance assessment is to provide continuous feedback on program implementation. This assessment should reveal which components of the system are strong and which ones need to be strengthened in order to improve the quality of the information. As for any type of evaluation, the intent to use the findings to adjust the design, protocol or approach for future surveillance activities. This can be done by setting new targets of achievement for the next round of surveillance activities this evaluation emphasizes how an evaluation can be used to document decisions and support management actions to improve the system (1).

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

The evaluation of a surveillance system promotes the best use of data collection resources and assures that systems operate effectively. Surveillance system evaluation allows us to define whether a specific system is useful for a particular public health initiative and is achieving the overarching goals of the public health program and the data collection objectives. Any evaluation should include recommendations for improving the quality and efficiency of the system and a timeline for implementing changes based on available resources (3).

Surveillance serves at least eight public health functions. These include supporting case detection and public health interventions, estimating the impact of a disease or injury, portraying the natural history of a health condition, determining the distribution and spread of illness, generating hypotheses and stimulating research, evaluating prevention and control measures, and facilitating planning (4).

The goal of public health Emergency Management (PHEM) was to better track and monitor diseases of public health concerns (5). This structure is extended down to the Woreda level in their capacities.

The FMOH of Ethiopia identified 21 top priority diseases which are epidemic prone, of international concern and diseases that have eradication and elimination programs for surveillance

activities. These diseases are monitored by a designated body through available means of communication- telephone, paper-based reporting etc. These diseases are mandatory notifications which are immediately reportable diseases and routine surveillance reported weekly Malaria is one of these 21 priority diseases reported on the weekly bases. (6)

In 2015/2016, the total of Laboratory confirmed plus clinical malaria cases was 2,320,135. In particular, the most pattern showed in increase in the first five months of the fiscal year reaching the highest peak in November, followed by a decreased in February and April. A total of 510 deaths were recorded in the same period nationally, with a case fatality rate (CFR) of 0.02%. (7) As funding for malaria control programs has increased, countries have invested in strengthening malaria surveillance systems.

Conducting an evaluation can potentially result in a clearer understanding of both the country's surveillance system and its malaria epidemic.

The purpose of evaluating public health surveillance is to ensure that problems of public health importance is being monitored efficiently and effectively. Public health surveillance system should be evaluated periodically and the evaluation should include recommendations for improving quality efficiency and usefulness. The evaluation of public health surveillance system should involve an assessment of system attributes including simplicity, flexibility, data quality, accessibility, sensitivity, predictive value positive, representativeness, timeliness and stability (11)

Rationale of the study

Malaria is a major public health concern in Ethiopia. Addis Ababa is malaria free however, malaria cases are diagnosing with in the Kolfe keranyo sub city limits as a result of infection acquired outside the city or with in its growing periphery.

The data generated from surveillance evaluation will be important to understand gaps, suggest possible intervention and also help to improve public health decision making and also evaluation of malaria surveillance system is not done before in the sub city.

OBJECTIVES

General objective

- To evaluate the surveillance system of malaria in Kolfe keranyo sub city, and forward solution for improvement.

Specific objectives

- To assess the core activities of the surveillance system such as case detection, reporting, analysis and training in Kolfe keranyo sub city
- To evaluate the attributes of the surveillance system of the selected cases in Kolfe keranyo sub city
- To identify the strong and weak parts of the system in the sub city and to provide recommendation based on the findings.

METHODS AND MATERIALS

Study Area: The study area was Kolfe keranyo sub city, one of the 10 sub cities in Addis Ababa Regional State. It is located at the western parts of Addis Ababa city Administration 9.6 K.M away from the center of the city.

Study design: Cross sectional study was conducted from June 15-30, 2017 in Kolfe Keranyo sub city Addis Ababa region.

Study Subjects: The study subjects were Health offices (the sub city Health office, Woreda Health office) and health centers.

Sample Size and Sampling: From the sub city among 15 Woreda we selected 3 Woreda health office purposely. (Woreda 01, Woreda 03 and Woreda 04) and two health centers from Woreda 01and Woreda 04.

Data collection: Data collection would be done by face to face interview using questionnaire/checklists. Answers from respondents (health office head and/or PHEM officers) and observation of tools for surveillance and secondary data review .Based on the WHO framework for monitoring and evaluating surveillance and response systems for Malaria diseases which was used to assess the core activities, supportive functions and quality components in Kolfe keranyo sub city.

Data Analysis: Data would be collected by interview and record review processed by using the Microsoft Excel.

Data dissemination: We would be prepared and shared the written report of both hard and soft copies, to Kolfe Keranyo health office, all visited Woreda health offices, Addis Ababa University/School of Public Health and Ethiopia Field Epidemiology Training Program mentor, resident advisors.

Operational Definition

Confirmed malaria case: A suspected case confirmed by microscope or RDT for Plasmodium parasite.

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

Malaria outbreaks: - Crossing the norm line or doubling the number of malaria cases compared to the prior year of reported WHO epidemic week.

Clinically and confirmed case: - malaria suspected cases plus confirmed malaria cases

Acceptability: -Willingness of persons and organizations to participate in the surveillance system. And it will be measured quantitatively through the reviewing completeness of report forms for the past three months and timeliness of information coverage.

Accuracy: - Degree to which a measurement or an appraisal based on measurements represents the genuine value of the attribute that is being evaluated.

Completeness: - Proportion of all expected data reports that were actually submitted to the public health surveillance scheme.

Information Quality: - Data quality reflects the completeness and robustness of the data entered into the public health surveillance scheme.

Flexibility: - A flexible public health surveillance system can conform to changing data needs or operating conditions with little extra time, staff office, or allocated funds. Flexible systems can accommodate, for instance, new health-associated effects, changes in case definitions or technology, and variations in funding or reporting sources. In accession, organizations that utilize standard data formats (e.g., in electronic data interchange) can be well mixed with other arrangements and therefore might be considered flexible.

Predictive value positive (PVP): - PVP is the proportion of reported cases that actually have the health-related event under surveillance.

Representatives: - A public health surveillance system that is represented accurately describes the occurrence of a health-related event over time and its distribution in the population by place and person.

Simplicity: - The simplicity of a public health surveillance system refers to both its structure and ease of operation. Surveillance systems should be as simple as possible while still meeting their objectives.

Stability: - Stability refers to the reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed) of the public health surveillance system.

Timeliness: - Interval between the occurrence of an adverse health event and (i) the report of the event to the appropriate health agency, (ii) the identification of that agency of trends or outbreaks, or (iii) the implementation of control measures.

Usefulness: - How helpful the system is to public health staff in taking actions as a result of interpreting and analyzing its data.

Validity: - Degree to which statistical information correctly describes the phenomena it was designed to measure.

RESULT

.Population under surveillance

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 Kolfe keranyo sub city cascade the same structure, with a total population of 537,023 in 2017(projected from the 2007 national census).

Table 12: Number of health facilities in assessed Woreda of Kolfe keranyo sub city, Addis Ababa Region, June 15-25/2017

Administrative area	Total population	Number of health facility			
		H.C	Private Hospital	Private clinic	NGO
Woreda 01	40,594	01	02	06	0
Woreda 03	65,538	01	01	04	0
Woreda 04	37,682	01	01	07	0

Assessment of core activities and supportive functions of the Malaria surveillance system

The study found that the knowledge of the system was found to be 100% at all levels of the malaria surveillance system of the Kolfe keranyo sub city. Data reporting was over the recommended standard of 80% at all levels. Data analysis, epidemic preparedness and feedback were below the recommended standard of 80%. All assigned surveillance focal persons had been trained. The quality of Malaria surveillance system was poor at the private health sector as the system was not representative.it also lacked timeliness due to poor documentation in receiving and sending reports; it did not use the data collected to apply intervention for control and prevention of communicable diseases on a routine basis. Case definition is vital for the communicable diseases case detection. A manual of disease-specific case definitions has been distributed to the health facility staff in Kolfe keranyo sub city. All health facilities had an outpatient register, and hospitals had an inpatient register for recording of the cases.

All levels had the recommended standard reporting form. All personnel agreed that reporting was easy and was not time consuming - the average time for preparing the weekly reports was one hour

at all levels. All surveillance focal personnel at health facilities were trained in preparing the malaria diseases surveillance weekly reports.

No analysis of malaria diseases surveillance data was done at the Woreda and health center level. All Woreda and health facilities had computers for data management, the sub city had epidemic threshold for malaria diseases.

A case investigation sheet was used by almost all levels. All levels had functioning epidemic management committees but there was no standard, regular rapid response team was no at Woreda level, instead, it was activated when needed.

Sub city produced a regular feedback report to the lower level. There was no standard format for the feedback at lower levels, and none of the lower levels had well formulated feedback.

Table 13: Percentage of the performance of malaria surveillance system core activities at different level in Kolfe keranyo sub city, 2017

Core activity	Sub city (n=1)		Woreda (n=03)		Health facility (n=2)		Standard bench mark
	No	%	No	%	No	%	%
Case detection							
Knowledge of disease under surveillance	1	100	3	100	2	100	80
Case conformation							
Presence of specimen collection guide line	0	0	0	0	2	100	80
Follow up of specimen result	0	0	0	0	2	100	80
Keep the specimen result	0	0	0	0	2	100	80
Data reporting							
Availability of malaria reporting form	1	100	3	100	2	100	80
Average time to prepare the weekly malaria report (1 hour)	1	100	3	100	2	100	80

Data Analysis							
Perform trend analysis	1	100	0	0	0	0	80
Use of appropriate source of denominators	1	100	3	100	2	100	80
Aggregate case data by demographic category	1	100	3	100	2	100	80
Epidemic preparedness and response							
Involved in outbreak investigation	1	100	3	100	2	100	80
Presence of written epidemic preparedness and response plan	1	100	0	0	0	0	80
Presence of emergency stock of drug and supplies	1	100	3	100	2	100	80
Existence of epidemic management committee	1	100	3	100	2	100	80
Presence of epidemic rapid response team	1	100	0	0	2	100	80
Feed back							
Received feedback from higher level	1	100	3	100	2	100	80
Presence of well formulated feedback	1	100	0	0	0	0	80

The sub city was found to have standard guidelines in the form of malaria manuals, and these manuals were found at the two Woreda level, and at one of the health facility levels. However, only one of the health facility used these guidelines to direct their surveillance activities the sub city had a regular supervision system at all levels. About two of the Woreda had documentation that all recommended visits during the study period had been performed.

The sub city used standard checklists for the supervision. On the other hand, no written supervision feedback system existed at Woreda levels and health center.

Professional and well-trained staff was available at the all level. At the health facility level, the system had only two trained staff member conducting surveillance among other duties.

About 100 % of the health facilities had functioning communication methods. The weekly epidemiological reports sent them via phone.

Table 14: Percentage of the performance of malaria surveillance system supportive function at different level in Kolfe keranyo sub city, 2017

Core activity	Sub city (n=1)		Woreda (n=03)		Health facility (n=2)		Standard bench mark
	No	%	No	%	No	%	%
Malaria surveillance system manual							
Presences of malaria surveillance manual	1	100	2	67	1	50	80
Use of the manual to guide the surveillance activity	1	100	2	67	1	50	
Training							
Training of the rapid response team	1	100	0	0	2	100	80
Basic training on malaria surveillance system	1	100	3	100	2	100	80
Post basic training on malaria surveillance system	1	100	0	0	0	0	
Supervision							
Presence of supervisory visits to the lower level	1	100	3	100	2	100	80
Existence of supervisory visits feedback system	1	100	0	0	0	0	80

Implementation of supervisory visits recommendation	1	100	3	100	2	100	80
Resources							
Presence of office	1	100	3	100	2	100	80
Presence of functioning telephone	1	100	3	100	2	100	
Presence of functioning transportation	1	100	0	0	0	0	80
Availability of computer	1	100	3	100	2	100	80
Availability of functioning photocopier	1	100	2	67	2	100	80
Availability of disinfection materials	1	100	3	100	2	100	80
Availability of protection materials	1	100	3	100	2	100	80

Description of attributes of the surveillance system

Usefulness: In all visited health office and health facilities respondents has a common understanding of early detection of epidemics of diseases under surveillance as the major use of the surveillance system.

More over the respondents believe that the surveillance system helps to detect the outbreak of the selected disease on time, estimate magnitude of the morbidity, mortality, factors related to those diseases and permit assessment of the effect of the prevention and control program.

Detection of cases: The PHEM surveillance system was organized in community, all other health facilities and the Woreda under the MOH will have active role in the detection of cases. However, dissemination of case definitions of these priorities selected diseases were 100% among visited health facilities.

The physical accessibility of the health care services was in all visited Woreda with the commitment of HEW and community volunteers create a good health seeking behavior in the communities. The laboratory capacity to test, and role in the surveillance of malaria was assessed at the health facility

Kolfe keranyo sub city reported 773 confirmed malaria cases were reported during July 2016 to June 2017. Among the total cases, 264(34%) of them were plasmodium falciparum. In A total of 45,65and 58 confirmed malaria cases were reported from the woredas 01 ,03 and 04 respectively to Kolfe keranyo sub city from July, 2016 to June, 2017. Of these, 54 (32%) cases were positive for Plasmodium falciparum.

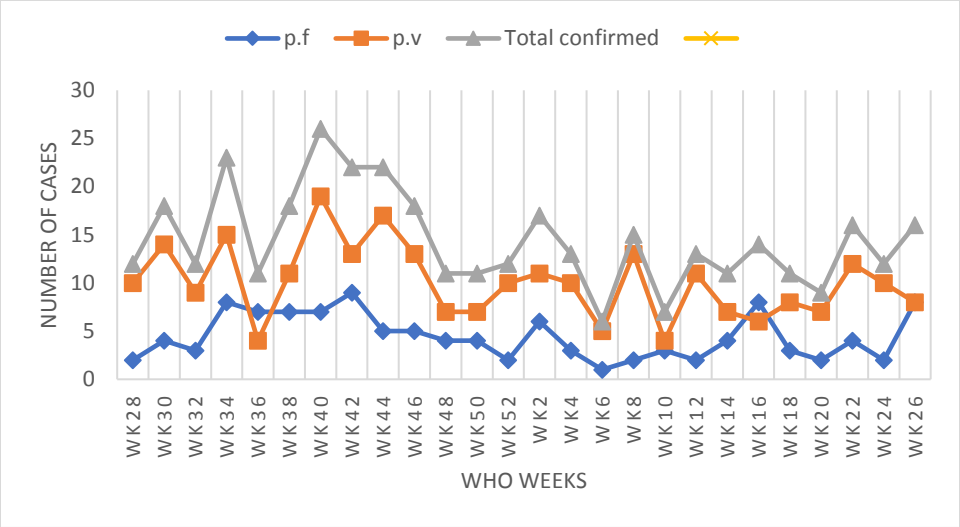

Figure 12: Trends of confirmed malaria cases by species in Kolfe keranyo sub city, August 2016- June 2017

Providing appropriate and rapid response to epidemics:

According to the respondents, the Woreda epidemic committee is not evaluating their activities regularly in all the visited Woreda, in the health center RRT will be deployed for cases investigation and management within one day whenever there is a suspected epidemic was reported from the community. The sub city health office also responded with in 48hrs of report received from the lower level by different means. Generally, the surveillance users are satisfied with the current existing system.

Simplicity: In the detection of cases all of the respondents (100%) agreed that the case definitions of these priority diseases for identification of suspected cases is easy to understand and can be applied by all levels of health professionals

Data follow: All (100%) of the visited sites agree that route of the data flow is clear and simple as it was set in the PHEM guideline and the reporting entities were also simple and understandable by all staff About 100% of the health center and Woreda had standard weekly reporting formats. All of the interviewed staffs (100%) also responded as a weekly report took an average of 10-15 mint or more to fill a single report. The major problem mentioned by no modern means of communication like e-mail for reporting cases to the next higher bodies particularly from the health center to Woreda or sub city but communicate by via phone.

In the data management weekly or immediately PHEM data from the health centers were sent to respective Woreda health office and to sub city and regional health bureau in telephone and use of the data was also very limited at Woreda and facility level since the collected data were not analyzed there. However, the weekly report that received from Woreda health offices by phone entered in to standard format and sent to sub city health office mostly through telephone. Sub city health office analyzes and interpret data by person, place and time in order to use for the future planning and monitoring.

Flexibility: All visited Woreda health offices and sub city health department responded as the Public Health Emergency Management (PHEM) system made the reporting format flexible to report other new events under immediately reportable case-based conditions.

The quality of data: We assess the data quality in all visited sites emphasizing completeness and timeliness of the report. At health facility level there are commonly missed essential variables like age, sex, address and the others variables of interest so that reported only limited variables stated only on the form. In some reporting formats, the variable age has the same column for different units (year and month). This has its own challenge during data analysis. At sub city and Woreda health department all the information needed to be reported in weekly report format was complete including zero report.

Acceptability: The acceptability of the surveillance system assessed based on the engagement of the reporting agents and active participation in the case detection and reporting. In the sub city, the engagement of the reporting agents and active participation in the case detection and reporting satisfactory seems accepted by the health staffs with 100% reporting rate of the health facilities.

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, and the technical capacity of the health care providers. The health service converges of the visited Woredas ranges from 96% to 100%. The health seeking behavior of the communities was also changed from time to time due to awareness creation by HEWs rounding house to house in all of the households

Timeliness and completeness: The weekly reporting rate (completeness) of the health facilities in the Woredas were 95.5% with relatively low among private clinic (92%) and high among HCs (99%). In reports of visited sites, date of report sent to next level was not documented and was challenging during evaluation of report timeliness.

Stability: Stability refers to the reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed) of the public health surveillance system. A lack of dedicated resources and budget might affect the stability of a public health surveillance system.

DISCUSSION

Malaria surveillance system objectives were found to be clear and well documented at the sub city level and the Woreda level. None of the health facility had written objectives although most of the respondents at these levels were fully aware of them. This shows that the system was well established but missed the documentation at the lower levels. The clear written objectives at all levels of the malaria surveillance system are an important tool to guide the success of the system. These have helped the malaria surveillance system in Kolfe keranyo sub city to function better. Although in a decentralized system all levels must have their own roles in formulating all system functions, it still can be acceptable that the objectives of the system are formulated at the central level and disseminated to the lower levels. However, in Sub city and Woredas had clear objectives and the staff on the other levels had no written objectives of the system. This could be considered as a very serious defect in the sub city malaria surveillance system. Without knowing the aim of performing malaria surveillance system activities, staff may lose commitment to the system, which can result in poor malaria surveillance system quality outcome. In addition to the lack of updating the manual for disease specific case definitions, most of the studied Woredas and health facilities had not even the outdated malaria manual available, which implies that the case detection quality faces serious problems. On the other hand, continuous supervision visits, which are regularly conducted at different levels, improve this situation.

Laboratories are a major part of the concept of IDSR which was adopted by sub city as the base for malaria diseases surveillance. The link with Laboratories network is well functioning all the time, it was regular and for certain diseases that have a special programed such as malaria. The health facilities were much better in confirming malaria disease.

The cornerstone of the surveillance system, registration and reporting of priority diseases, was well built, since all levels in Kolfe keranyo sub city used the standard data reporting form.

It is important that the surveillance data analysis at the first point of its collection is used for action. However, Kolfe keranyo sub city health facilities are not yet well prepared to perform malaria surveillance system data analysis; but the analysis done at sub city levels of the system. This would make the sub city system the same compared to other African countries (13).

Functioning epidemic management systems are a challenge for any malaria surveillance system mainly in developing countries (15). The system in Sub city needs urgent and major changes in the epidemic management system to provide the desired functions in controlling epidemics in a

standard way in the Woreda; these changes include epidemic plan, rapid response team financing and epidemic reporting system. Further, lower levels of MSS had no written epidemic management plan, which affects the effectiveness of organized response to outbreaks. In this respect, the sub city system is similar to some African countries (16). Sub city alert and response system for epidemics is a centralized system, thus it does not function in the lower levels. This is a major problem as outbreaks must be handled immediately due to the importance of time factor in performing intervention measure all the time.

In Kolfe keranyo sub city has well trained and professional staff at the sub city level. However, in Sub city the system is facing shortages of staff at lower levels where the staff conduct surveillance activities next to other preventive medicine activities. High work overload at those levels affects the quality of the MSS activities. It has been pointed out that participants in the surveillance system should be properly trained for their surveillance tasks; through both initial and ongoing in-service training (17).

CONCLUSIONS

Public health surveillance system is basic for population wellbeing. According to the evaluation, the system is in place and help full for detection of the diseases and outbreaks. Concerning to the reporting format other than weekly report form, case-based report form, line list report form and log books were found adequately. Most of the visited sites have other surveillance manual also seen in most of the health facilities but not for malaria. Concerning to epidemic preparedness and response plan, there was seen only sub city level but not available in all assessed Woreda and health facilities, All of the PHEM focal persons were trained on the new PHEM guideline in all visited sites but Weekly and monthly PHEM data (report) was not consistent with their clinical register in most of the visited health facility. Epidemic management committee was formally established in all Woreda and sub city based on the guideline. But none of visited site have minute of meeting for epidemic management committee and did not evaluate their preparedness and experience as per the guideline of the national and regional recommendation

In the sub city the system is facing shortages of trained staff at lower levels where the staff conduct surveillance activities next to other preventive medicine activities. High work overload at those levels affects the quality of the MSS activities. A lack of dedicated resources and budget might affect the stability of a public health surveillance system.

RECOMMENDATIONS

- Surveillance data should be analyzed, interpreted and used for decision making at woreda and health facility.
- In order to improve diseases detection, capacity building of health care providers at health centers levels on reporting system and to decrease the work load of the health workers
- Epidemic committee should be alerted all the time in respect to preparedness and response and also post epidemic evaluation has to be strengthened
- Manual of malaria disease will be available in all Woreda and health facilities.
- Epidemic preparedness and response plan will be available in all Woreda and health facilities.
- Budget should be secured for surveillance activities at Sub city.
- The sub city availed modern means of communication like e-mail for reporting

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CHAPTER IV - HEALTH PROFILE DESCRIPTION REPORT

Health profile description, Woreda 01, Kolfe Keranyo sub city, A.A

ABSTRACT

Introduction: Health profile is a process of gathering and interpreting information by this information the stake holder to develop strategies to improve the health status of the community and important to prioritize the health problem of the country and identified public health problem and also use for planning, implementation and evaluation of the public health program. The Objective of this study is to assess health and health related conditions in Kolfe Keranyo sub city, (woreda 01), on 2017 and to identify problems for priority setting.

Methods: This health profile data was collected by reviewing health and health related data in Kolfe sub city Woreda 01 from different organization. The data was collected by using data collecting check list from February 1-30/2017. And then the data was processing, organizing and analyzing by Micro soft Excel software.

Result*:* The estimated total population were 40,594 in the woreda for the year 2009 E.C of this 19,891 (48.9%) were males. Acute upper respiratory tract infection was a top public health problem. Fully immunization coverage of the woreda was above 100%

ANC1 and ANC4 service 1097 (108%) and 476 (51%) pregnant woman received the service respectively.364 (39%) deliveries were attended by skilled birth attendants. There were 1464 (64%) family planning users.

A total of 43 malarias were reported from the health facility. Regarding to TB, there were 102 TB cases detected. Of the total TB cases 65 (63.7%) were pulmonary type of TB and 37 (36.3%) extra PTB. Total TB patients screened for HIV were 102. A total of 712 clients were screened for HIV at PICT and PMTCT sites.

Conclusion and Recommendation: Upper respiratory infection and diarrheal diseases are the top leading causes of morbidity in adults and children. most of the disease were affected the population due to lack of personal hygiene and sanitation, so the health extension workers strengthen health education for the prevention of those disease and woreda health office should strongly work on sanitation to solve future problem of the community. There were no OTP (program working on nutritional activity) and ART clinic in the woreda, because of this it was difficult to give the service for the community and increase Alert hospital work burden. There for, it should be opened for the sake of improving the health of the community.

INTRODUCTION

Health profile is a process of gathering and interpreting information by this information the stake holder to develop strategies to improve the health status of the community and important to prioritize the health problem of the country and identified public health problem and also use for planning, implementation and evaluation of the public health program.

The purpose of this health profile is by compiling information knows the health status and socio-economic condition of the woreda.

Describing the health profile of woreda depend on different activities area, like health facility, education and school health, human resources, health indicators and vital statics, immunization coverage, water supply and sanitation, endemic diseases, nutritional status, the leading causes of morbidity and mortality, disaster situation and health budget allocation.

To Reducing the child mortality and improvement of maternal health are achieved, this health profile assessment tools are mandatory. It is essential tool for identifying community health problem and this must be an integral part of local decision-making and strategic planning process.

So, doing this health profile to assess and describe health and health related issues and to identify problem for priority setting.

BACK GROUNDOF KOLFE KERANIYO SUB-CITYAND WOREDA 01

Kolfe Keranyo Sub-City is one of the largest in population and covers a wide geographic area among ten Sub-Cities established in the Addis Ababa City Administration. It is located at the western parts of Addis Ababa City Administration 9.6 kms away from the center of the city. The altitude of the sub-city ranges from 2255 to 2838 meters above sea level which has a range of 579 meters (1). At present, the sub-city is divided in to fifteen districts/ woredas/with their defined administrative area and population, 103 sub woredas (ketena), 393 Sefers, and 1385 blocks. It covers an area of 6348.09 hectares (63,480.9 square kilo meters). Among this, 1334 square kilo meters covered with forest and included prominent feature Mount Jemo, Jemo River, and Repi Medhanealem Mount. It is one of the rapidly expanding sub-cities of Addis Ababa where intensive housing construction is taking place. It shares boundary with Addis Ketema Sub-City in north east, Lideta Sub-City in the east, Gulelle Sub-City in north, Nifas Silk Lafto (NSL) Sub-City in south and south east, and Oromiya national regional state in the west at large. Ring road crossing from general Wingate to Ayer Tena detaches Kolfe Keraniyo sub-city from neighboring sub-cities.

Other three main asphalt roads which serve as junction to eastern, southern and western Ethiopia to the center cross in the sub-city (1, 2).

Currently there are 11 functional public health centers and 1 Health post, 1 federal hospital, two general and two primary private hospitals, two NGO health centers, two NGO clinics, around 12 specialties clinics, one MCH center and near 60 medium and primary clinics in the administrative area of Kolfe Keranyo sub-city. Ten out of fifteen districts have one public health center (1).

Woreda 01 is one of the 15 Woreda of Kolfe keranyo Sub city in Addis Ababa region. All Addis Ababa solid waste disposal location called "Koshe" found in this woreda. The total population of the Woreda is estimated to be 40,594 of which 19,891 is Male and 20,703 were Female in 2009E.C. The productive age groups child bearing women (15-49 years of age) accounts for 14,058 (35%) of a total population.

Rationale of the study

Kolfe keranyo sub city, Woreda 01 health profile was not done before so this health profile description project will help for prioritizing public health problem of the Woreda and used for planning, implementation and evaluation of the public health program. And also, such information helps to improve service quality of health facilities.

OBJECTIVE

General Objective

- The General Objective of this study is to assess health and health related conditions in Kolfe keranyo sub city, (Woreda 01), on 2017 and to identify problems for priority setting.

Specific Objective

- To describe the demographic and geographical status of the Woreda.
- To identify the health service status of the Woreda.
- To identify priority problems.
- To describe the health status of population.

METHODS AND MATERIALS

Study area: Health profile description was conducted in woreda 01, which is found in Kolfe keranyo sub city, Addis Ababa region.

Study period: The study period was from February 01-30/2017 in Kolfe keranyo sub city woreda 01 of Addis Ababa region.

Study population: The study population were including the total population of woreda 01 which is estimated as 40,594.

Study design: A cross sectional study design was conducted using standard pre-tested checklist. Analysis was done using Excel computer software. The data of health profile description were displayed by Table and Charts

Data collection techniques and procedure

The health data was collected from woreda health office and also from different woreda office (water sanitation, Education, Energy, Finance and Revenue) from February 1-30, 2017.

Ethical clearance

Health and health related information of woreda 01 was collected after obtaining official letter from Kolfe sub city health office and permission was obtain from woreda 01 health office and other concerned bodies in the woreda.

Operational definition

Demography: The study of population and its characteristics, with reference to such factors: size, age structure, density, fertility, mortality, growth and social and economic variables.

Child mortality rate: The number of death under five years of age occurring in 2008 E.C to the number of birth in the same year.

Crude birth rate: The number of births in a population during 2008 E.C divided by the number of person-years-lived by the population during the same period. It is frequently expressed as births per 1,000 populations

Crude Death Rate: The number of deaths in a population during 2008 E.C is divided by the number of person-years-lived by the population during the same period. It is expressed as births per 1,000 populations.

Infant Mortality Rate (IMR): The ratio of the number of deaths under one year of age occurring in 2008 E.C to the number of births in the same year.

Clean and safe delivery: Proportion of deliveries attended by HEWs.

Contraceptive prevalence rate: Proportion of women of reproductive age (15-49 years) who are using (or whose partner is using) a contraceptive method, on the year 2008 E.C.

Contraceptive acceptance rate: Proportion of women of reproductive age (15-49 years) who are not pregnant who are accepting a modern contraceptive method (new and repeat acceptors).

ANC rate (how many of the total expected pregnancies attended 1st ANC): Proportion of pregnant women attended, at least once during the current pregnancy, by a health professional, for reasons related to pregnancy.

Skilled delivery: Proportion of deliveries attended by skilled health attendants; A skilled birth attendant an accredited health professional – such as a midwife, doctor or nurse – who has been trained in the skills needed to manage normal (uncomplicated) pregnancies, child birth and the immediate postnatal period, and in the identification, management and referral of complications in women and newborns.

Tuberculosis (TB) case detection rate: Number of new smear positive TB cases detected, among the new smear-positive TB cases estimated to occur in the woreda.

TB treatment success rate: Percentage of a cohort of new smear positive TB cases registered in a specified period that successfully completed treatment. Successful completion entails clinical success with or 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 bacteriologic evidence (a negative sputum smear result recorded during the last month of treatment and on at least on one previous occasion during

Dissemination of finding

The study result will be disseminated to Kolfe sub city, Woreda 01 administration, woreda health office, department of Ethiopian Field Epidemiology Training program (EFETP) by hard copy and soft copy.

RESULT

Historical Background

Woreda 01 is one of the 15 Woreda of Kolfe keranyo Sub city. "Koshe" found in this Woreda," the name called "Koshe" comes from it is the places of Addis Ababa city rubbish dump, it was 50 years old rubbish dump and every year 3000 Ton waste disposed this area, it covers 37 hectares.

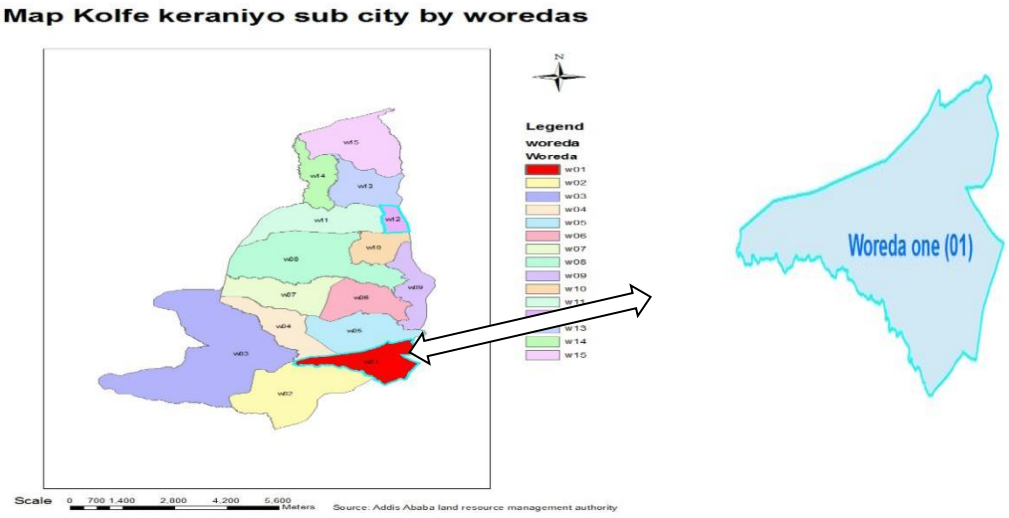

Figure 13: Map of Kolfe keranyo sub city by woreda

Geography and Climate

It is located at the Southern parts of the Kolfe keranyo Sub city. The average altitude of this Woreda is around 2327 meter above sea level. It has found at geographical coordination of 8^0 59'-8^0 98' latitudinal from North South and 38^0 42'-38^0 70' longitudinal to East to West. The total area of the Woreda is about 311sq.Km.(4.9% of the total sub city area). The average rain fall of the Woreda was 1200m and the maximum temperature of 17-21 0c and the minimum temperature of 14-14 0c.

The Woreda has boundaries. In the North 05 Woreda, in the South with Nifase silk Lafto Sub city, in the east also Nifas silk Lafto Sub city and in the West 02 Woreda. Like many parts of the Kolfe sub city Woredas, Woreda 01 enjoys all the four seasons (Kermit, Tib, Bega, Tseday) of the year

Administrative Organization

Woreda 01 is one of the 15 Woreda of Kolfe Keranyo Sub city in Addis Ababa region. There are Five Ketena in the Woreda. There were 22 Sectors found in the Woreda. All ketena has road transportation access to woreda. Telecommunication is one of effective mode of communication. There is a mobile network working in all ketena but how many people access to fixed telephone and mobile phone in the woreda is not known. In this woreda, all ketenas have supplied with electric power.

Demographic Information

The total population of the Woreda is estimated to be 40,594 of which 19,891 is Male and 20,703 were Female in 2009E.C. Among the total population under 1 year and less than 5 years constitute 909 and 2907 respectively. The productive age groups child bearing women (15-49 years of age) accounts for 14,058 (35%) of a total population.

Beside Ethnicity distribution of the Woreda, the largest Ethnic in Woreda 01 is Amhara which accounts around 22,190 (54.6%) followed by Oromo 10,930 (26.9%), while 4,477 (11%) of the population of Gurage, 1,717 (4%) of the population was Tigre and 1,280 (3%) were others.

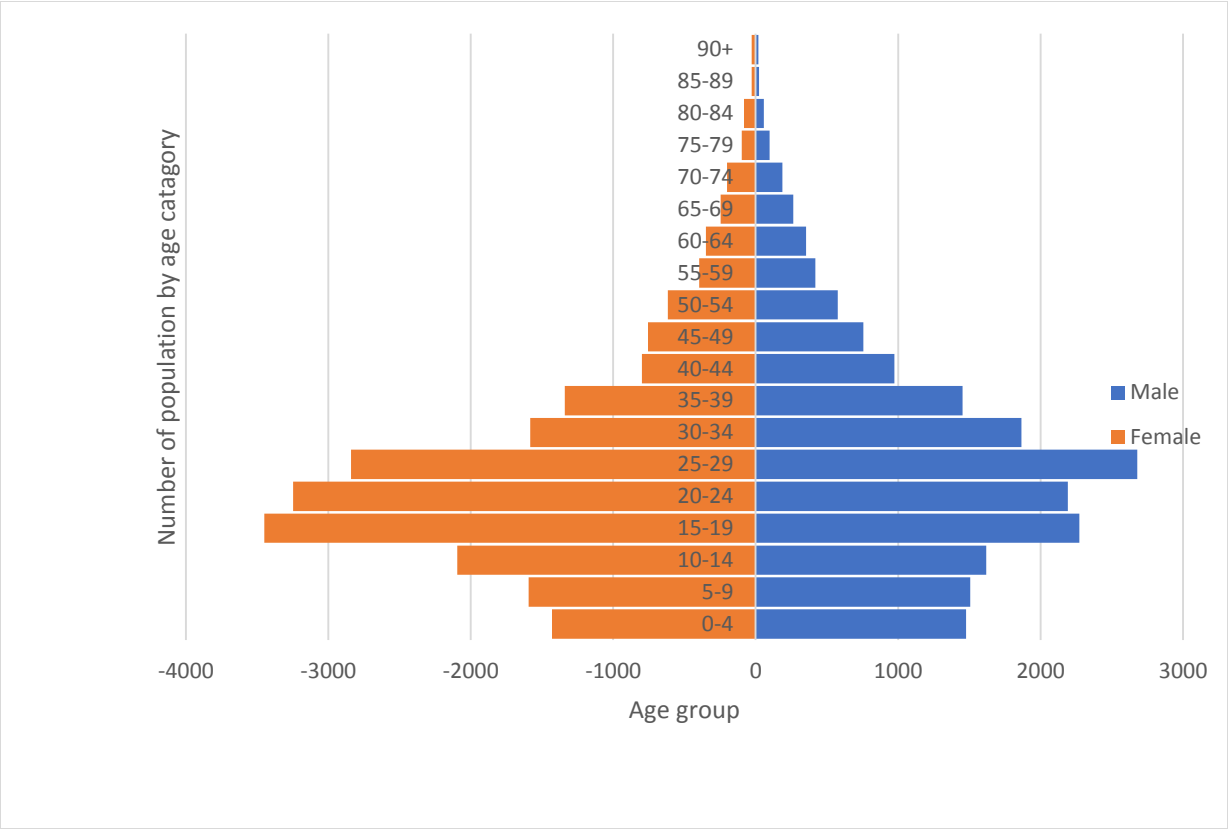

Figure 14: Population Pyramid of Kolfe keranyo sub city

Economy

Even if there is no detail data I get from the woreda regarding the economic status of the population and the main income sources. There were 223 government employees found in the woreda of those 84 males and 139 females. Based on data received from woreda trade and industry breuo,3000 populations are merchants. According to labor and social affairs office,1272 productive individuals were unemployed of these 771(61%) were males and 501 (39%) were females. The average or yearly income of individual in the woreda is not knowns.

Education and School Health

Based on the data received from Woreda Education Office a total of 33 schools. of which 6 is Government schools and 27 are Private Schools in 2009 E.C. Among the total Schools 14 were K.G, 11 were Elementary School, 4 were High School and 4 were College.

A total of 13,218 Students were enrolled at different level of schools in the Government and Private, of whom 6393 (48%) were Males and 6825 (52%) were Females.

The Male to Female ratio of School attendance was about 0.9 to 1 from total Schools.as information obtained from woreda Education office, number of female students showed increment when compared to previous year in primary school.

Overall dropout rate was 0.75% in 2008 E.C.33 (100%) Schools have latrine with separate Male and Female and 32 (97%) Schools have water supply. All Schools have HIV and others health clubs.

Table 15: Distribution of school by sex in 2009 E.C, in Woreda 01, Kolfe Sub city, Addis Ababa Region

School Enrolment	Sex			
	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Illiterate	---	----	-------	
KG	1333		1180	
Elementary	3653		4238	
High school	348		410	
TVET	0		0	
Collage/University	1059		997	
School Age Children (target)	----		----	
School dropout year 2008 EFY	84		33	

Infrastructure for health Facilities

All health Facilities found in the Woreda have an access to transportation for their catchment

Population, telecommunication, Electric Power and water supply.

Safe water coverage

There is no clear data on safe water coverage in the woreda. In the woreda there are 5 ketena, among these four ketenas getting safe water. But ketena 05 population have no safe water supply, the population gain safe water from others ketena. The main source of water in the Woreda was pipe water.

Health delivery system

Woreda 01 has one Government Health center. Beside to Government health facility, there are different private health facilities in the Woreda which gives health service to the community.

Table 16: Number of health facilities in Woreda 01, Kolfe sub city, Addis Ababa Region, 2009 E.C

Type	Number
Gov. Hospital	0
Gov. Health center	1
Private Hospital	2
Clinics.	6
Diag.Lab.	0
Pharmacy	3
NGO health center	0
Hospital	0
Clinic	0

The Woreda Government health center had about 74 health professional and 42 supporting staffs. of this 11-health officer,25 Nurses,10 Mid wifes,6 Laboratory thecnitian,5 Pharmacy technician, 16 health extension workers. The health center to population ratio was 1:40,594, HO to population ratio was 1:3690, Nurse to population ratio was 1:1623, Mid wife to population ratio was 1:4059 and HEW to population ratio was 1: 2537.There was no physician in the Government health facility.

Table 17: Human resource for Government health facility Woreda 01, Kolfe sub city. Addis Ababa region, 2009 E.C

Types of Health professional	No.	Remark
Specialist	0	
G.P	0	
HO	11	
Nurses (Deg. and Dip.)	25	
Mid wife (Deg. and Dip.)	10	
Lab. (Deg. and Dip.)	6	
Pharmacy (Deg. and Dip.)	5	
Env. Health (Deg. and Dip.)	0	
HIT	1	
Health education	0	
HEWs	16	
Others (Applied biology)	0	

Top ten leading of outpatient visit (Morbidity)

There was different disease occurred in the Woreda in 2016. The ten top diseases are listed below for Adults. In the list of ten top diseases totally 16,367 patients were recorded. Of this acute upper respiratory infection accounted 32.6% of patients, followed by diarrhea (non-bloody) 10.2% and other unspecified of the skin and subcutaneous tissue 8.7% was the third among the top ten causes of morbidity for adults.

Table 18: Top ten causes of morbidity for adult's outpatient department Woreda 01, Kolfe sub city, A.A region, 2016.

Diagnosis		# of cases	%
1	Acute upper respiratory tract infection	5331	32.57
2	Diarrhea (non-bloody)	1673	10.22
3	Other unspecified disease of skin and subcutaneous tissue	1419	8.67
4	Urinary tract infection	1400	8.5
5	Infection of skin and subcutaneous tissue	1203	7.4
6	Disease of muscelo skeletal system	1163	7.1
7	Dental and gum disease	1152	7.09
8	Dyspepsia	1069	6.53
9	Other unspecified disease of eye and adnexa	999	6.1
10	Trauma	958	5.9
total		16,367	100

Top ten causes of morbidity for under five children.

A total of 6383 under 5-year children visited health facility in 2008 E.C, of this 2851(46.7%) of children comes because of Acute upper respiratory tract infection followed by diarrhea 1267 (20.8%) and then Infection of the skin subcutaneous tissue 651 (10.7%).

Table 19: Top ten causes of morbidity for under 5 children Woreda 01, Kolfe sub city, A.A region,2016

Diagnosis		# of cases	%
1	Acute upper respiratory tract infection	2851	46.7
2	Diarrhea (non-bloody)	1267	20.8
3	Infection of skin and subcutaneous tissue	651	10.7
4	Pneumonia	273	4.5
5	Other unspecified disease of eye and adnexa	263	4.3
6	Helminthiasis	209	3.37
7	Other unspecified disease of the digestive system	193	3.16
8	Otitis media	190	3.11
9	Diarrhea with blood (dysentery)	112	1.83
10	Other unspecified disease of skin and subcutaneous tissue	99	1.62
Total		6108	100

The woreda health center do not have admit patients except emergency waiting for 24 hours in the health center. Regarding mortality report, only one death was reported from Tuberculosis.

Vital Static and Health indicators

In woreda 01, there were no data of mortality, like Infant mortality rate, child mortality rate and Crude death rate. But no maternal mortality in the woreda.

Immunization coverage

There were conducted an immunization program for children<1 year and women in reproductive age group in the woreda. BCG immunization coverage was 119%, pentavalent 3 coverage was 119%, pcv3 coverage 129% and measles immunization coverage was 108%. The detail of immunization figure indicated on Table-7.

Table 20 : Distribution of immunization coverage for children < 1 years Woreda 01, Kolfe sub city, A.A region,2016.

NO	Types of Vaccine	%
1	BCG	129
2	OPV0	129
3	OPV1	117
4	OPV3	119
5	Measles	108
6	Penta1	117
7	Penta2	126
8	Penta3	119
9	PCV1	121
10	PCV3	129
11	TT2+N P. W	77
12	TT2+P.W	884

Cold chain system

Effective cold chain management system is essential for vaccine efficacy and prevents the vaccine preventable diseases. In this woreda health center have three functional refrigerators.

All these refrigerators are working with electricity power. In this woreda health center recording refrigerators temperature regularly including holidays and weekends. And Also, the sub city was conduct cold chain vaccine management supportive supervision each month.

Health budget allocation

In 2009 E.C, a total Government budget allocated for the Woreda was 23,097,100. of this 1,031,344-budget allocated for the Woreda health office.

There were NGO'S who support the woreda health office in different way of funds and technical support such as world vision and Love for children.

Disaster situation in the Woreda.

Based on the data received from Woreda health office PHEM, there were no natural or manmade disaster in the woreda in 2016. Acute watery diarrhea out breaks a total of 142 cases recorded. Of this 49 (35%) Female and 93 (65%) Males and two community death occurred

Community health service

This woreda has 14 HEW and 2 supervisors these HEW serves to the population addressing the primary prevention by mobilizing the population to protect and prevent environmental and private hygiene, including the household, water and community sanitation and also giving health education and conducting the primarily health care components of 16 packages. There were no TBAs and CHWs in the woreda.

Status of primarily health care components

Regarding ANC1 and ANC4 services 1097 (108%) and 476 (51%) pregnant women were received the services respectively.364 (39%) deliveries were attended by skilled birth attendants in the woreda in 2008 E.C. And 482 (57%) of delivered mother were used the postnatal care. Regarding TT2+ 884 (95%) of pregnant women have received TT2 vaccine. Table-8

Children treated for diarrhea and pneumonia at health facility 1267 (20%) and 237 (3.7%) respectively. During the study period 3 (0.8%) of still birth and no maternal death recorded in the

health facility. There were 1464 (64%) family planning users. Among these 1022 (45%) were used a short-term family planning and 442 (19%) long term family planning methods.

Table 21: Distribution of maternal and child health indicators in woreda 01, Kolfe sub city, 2016

S.no	Indicator	Total Number
1	Number of ANC Cases Registered	1097
2	Number of pregnant women provided at least TT2	884
3	PNC cases visited	482
4	Number of children <5 year treated for diarrhea at public HF	1267
5	Number of children <5 year treated for pneumonia at public health facilities	273
6	Number of facilities reporting stock out of contraceptive commodities	0
7	Total deliveries conducted by skilled attendants	364
8	Number of live births	361
9	Number of still births	3
10	Total obstetrics/Maternal/deaths	0
11	Total Newborn deaths	----

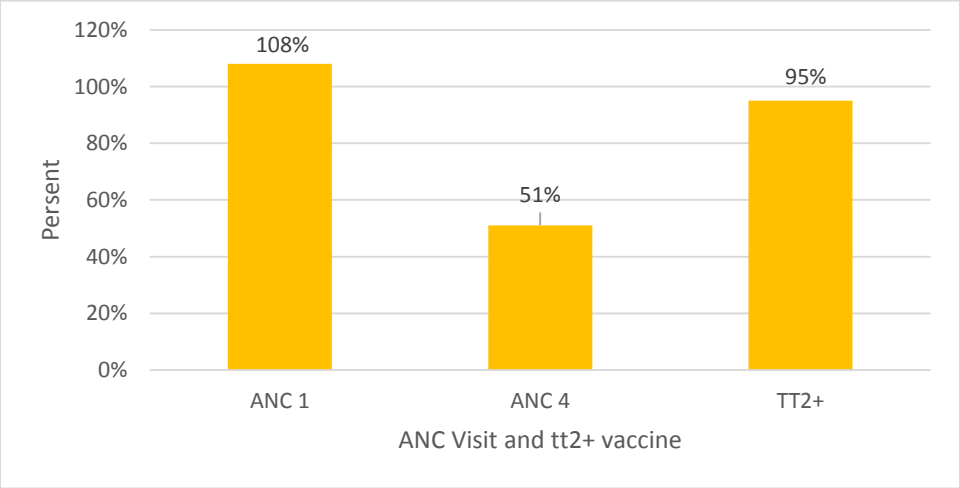

Figure 15: Mothers health service coverage in woreda 01, Kolfe sub city in 2008 E.C

Table 22: Distribution of family planning methods used by the woman's in woreda 01, Kolfe sub city in 2016

Methods	Frequency	Percentage
Oral Contraceptive	190	12.9
IUD	26	1.8
Implant	416	28.4
Injection	832	56.8
Condom	104	7

Environmental health and sanitation

There is no complete data on Latrine coverage and utilization rate in the woreda. Almost half of the ketena 5 population do not have toilet facilities. The community openly defecate in the surrounding.

Regarding to solid and liquid waste management, each ketena had one solid waste container and loader and every two weeks collected the solid waste each ketena even though Addis Ababa city rubbish dump place found in this Woreda and it was the problem of communities' health. There was poor liquid waste management in the woreda.

Health Education

The health facility provided regular health education for the patients and clients. In addition to this Health Extension workers used to give house to house health education. Last year a total 436 household community have graduated by 16 packages. Most of the topic covered last years were communicable disease, family planning, hygiene and sanitation and HIV/AIDS.

Endemic diseases

Malaria

A total of 43 malaria cases were reported from the health facility to the woreda in 2008 EFY. of these 39 (91%) were adults and 4 (9 %) were under five children. But no death was reported.

During the same year there was shortage of malaria supplies such as coartum and RDT in the woreda.

Tuberculosis and Leprosy

There were 102 total TB cases detected in the 2008EFY.Of these of the total TB Cases 65(63.7%) pulmonary type of TB and 37 (36.3%) cases were Extra pulmonary TB. From those pulmonary TB cases,28 (43%) were PTB positive and 37 (57%) were PTB negative. Among PTB positive cases 19 (68%) were males 9 (32%) were females. The TB detection rate of the woreda was100% with 98 % of TB cure rate, 98.6 % of TB completion rate and 98% of TB treatment success rate. There was one TB defaulter and one TB death on TB treatment. A total of 102 TB patients were screened for HIV. Of these 98 (96%) TB patients were sero negative and 4(4%) of patients were sero positive. Those TB and HIV co-infected patients were linked to the nearest ART clinic and Alert hospital, there was no Leprosy case detected.

Table 23 : Data about Tuberculosis in the woreda 01, Kolfe sub city in 2016

NO	Indicators	Number	%
1	Total TB cases	102	
2	PTB negative	37	
3	PTB positive	28	
4	Extra PTB	37	
5	TB detection rate		100
6	TBRX Completion rate		98.6
7	TB cure rate		98
8	TB RX success rate		98
9	TB defaulter	1	
10	Death on TB	1	
11	Total Leprosy cases	0	
12	Total TB patients screened for HIV	102	
13	TB patient screened for HIV and HIV negative	98	
14	TB patient screened for HIV and HIV positive	4	

HIV/AIDS

A total of 712 clients were screened for HIV in the last year at PICT and PMTCT service sites. Of these122 (17%) were males and 590 (83%) were females. Of the total screened clients 27(3.8%) were positive for HIV. Of whom 15 (55.6%) were females and 12 (44 %)were males. Of the total clients screened for HIV 484 were screened at PMTCT sites, among these screened clients 4 (0.8%) were HIV positive and 480 (99.2%) were HIV negative.

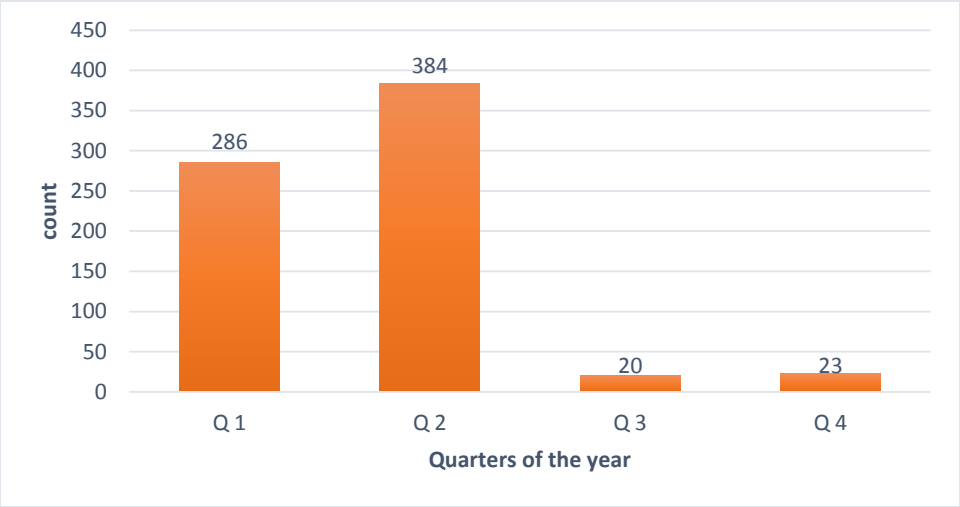

Figure 16: Numbers of clients who received PICT service in woreda 01, Kolfe sub city in 2008 E.C.

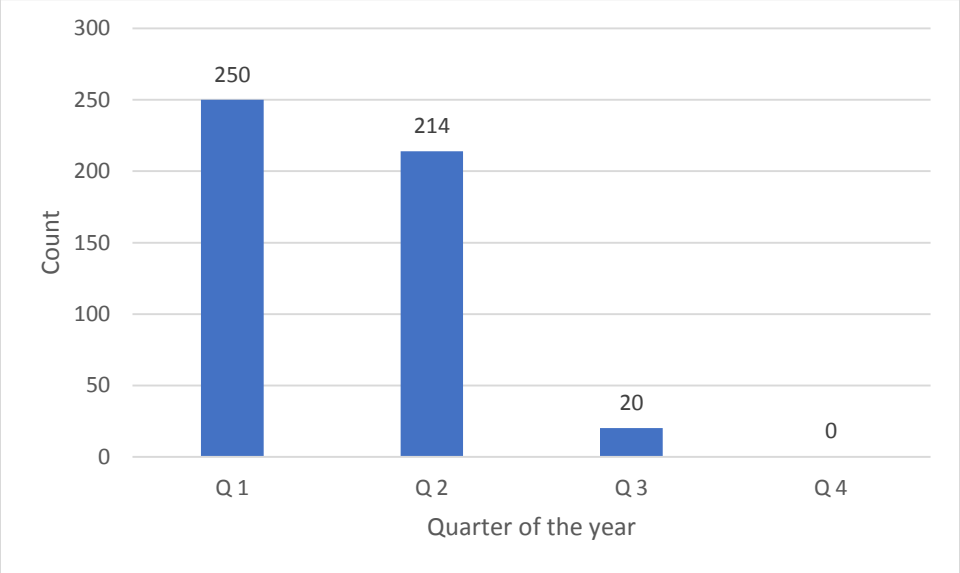

Figure 17:Numbers of ANC clients who received HIV test in woreda 01, Kolfe sub city in 2008 E.C

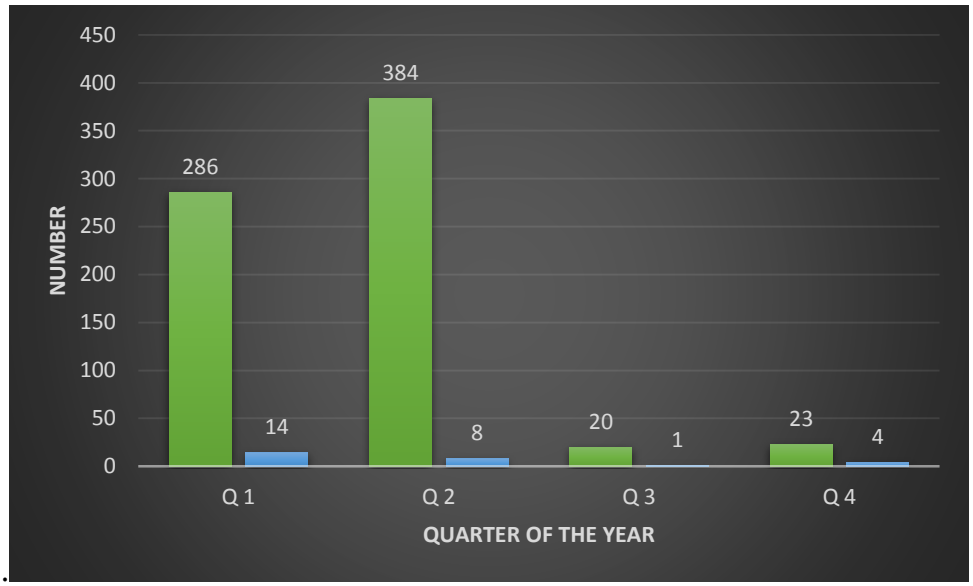

Figure 18: Number of Clients who received PICT Service and positive for HIV in woreda 01, Kolfe sub city in2008 E.C

Nutrition

The woreda has no OTP and SC sites for nutrition. In 2016 a total of 40 under five children was malnourished. Of these 27 (67.5%) were moderate malnutrition and 13 (32.5%) were severe malnutrition. And referred to other woreda admissions to OTP sites. There were no PSNP and CBN programs working on nutritional activities in the woreda.

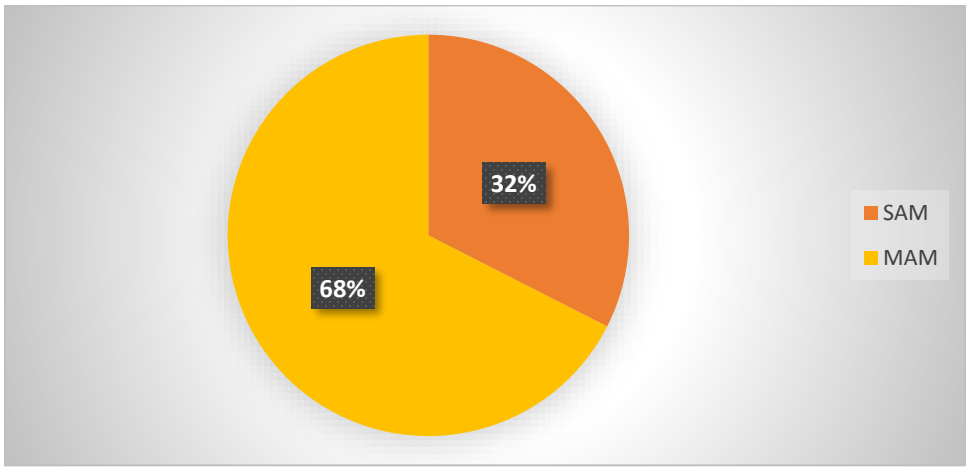

Figure 19 Distribution of Malnutrition in woreda 01, Kolfe sub city in 2008 E.C

Essential Drugs

The woreda 01 health center Pharmacy head reported that there was a shortage of Essential drugs repeatedly, like ORS Coartum, Ergometrine and Ferus Sulfate

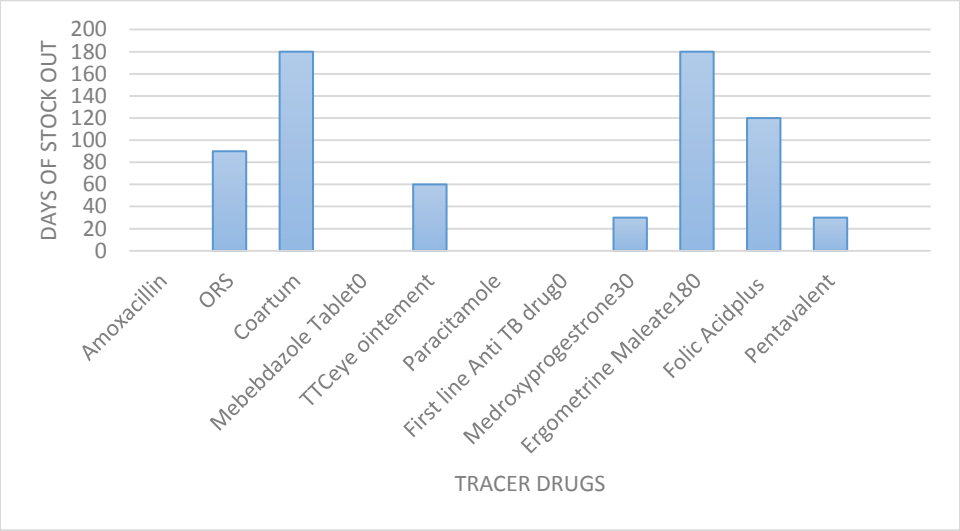

Figure 20 Distribution of Average stock out Days of Tracer Drugs in Woreda 01, Kolfe Keranyo sub city, 2016

Table 24: Problem based on priority criteria, woreda 01, Kolfe keranyo sub city 2017

S.no	Problem	Relevant (4)	Urgency (4)	Acceptability (4)	Feasibility (4)	Applicability (4)	Total (20)	Rank
1	Sanitation	4	4	4	3	3	18	1
2	Water supply	3	3	4	3	3	16	3
3	TB/HIV	4	3	3	3	3	16	4
4	Maternal health	3	3	4	3	4	17	2

Magnitude of the problem in present and score:1-25=1, 26-50=2, 51-75=3, 76-100=4

DISCUSSION

Health profile is essential tool for identifying community health problem. The estimated population for the year 2009 E.C in the woreda was 40,594 with male to female sex ratio of 0.96 to 1. Which was nearly similar to that of sex ratio male to female 1 to 1.08 of Kolfe keranyo sub city in 2017. (5)

Regarding the health service coverage of the woreda, there is one government health center. Based on the above data one health center is expected to serve 40,594 populations. The health center coverage is similar to the national urban coverage standard, which states a health center to give service for 40,000 populations. (6) Health profession with population ratio indicated that, HO and Nurse to population ratio of the woreda were nearly similar to that of the national figures. (3)

Contraceptive acceptance rate (CAR) proportion of women of reproductive age who are not pregnant who are accepting a modern contraceptive method (new and repeat acceptors), the contraceptive acceptance in woreda 23.2% is below Addis Ababa contraceptive acceptance rate which is 56 %. (7)

ANC1 and ANC4 coverage at woreda 108% and 51% respectively. EDHS 2016 finding 62% and 32%. A delivery attended by skilled skill birth attendant's were39%, which is less compared to the national 72.7%. Postnatal coverage of the woreda was 57% it was less compared to the Kolfe sub city and the national 93.9% and 89.3%. Pregnant woman TT2+ coverage was 95%, it was nearly similar to Addis Ababa region in 2016. Immunization status of children was almost similar to sub city, fully immunization coverage of woreda was108% and Kolfe sub city was156%. (7, 8, 9)

Acute upper respiratory tract infection was the leading causes of morbidity both adults and under five children. And also, AURTI was the leading causes of morbidity nationally. (7)

There were 102 TB cases detected of these 65 (63.3) cases were developed pulmonary TB and 37 (36.3) cases were developed Extra pulmonary TB. Among pulmonary TB 28(43%) of cases were pulmonary positive and 37 (57%) were pulmonary TB negative. It was less compared to Kolfe sub city and Addis Ababa region PTB cases in the year 2016.TB detection and TB cure rate were 100% and 98.6% respectively which is better performance than that of Addis Ababa region which was 100% and 67%. (10)

Regarding about HIV/AIDS, a total of 712 clients were screened for HIV in2016 at PICT and PMTCT sites. Providing HIV test for ANC clients coming for ANC service 484 (48.1%). This

performance is lower than Kolfe sub city which was 115% of client on ANC gets HIV test service. (8)

In 2008 from client coming for ANC service 4(0.8%) were tested positive for HIV which is significantly lower than compared to ANC based HIV sentinel surveillance studies report, the maximum sites reporting 5.1% prevalence. In the woreda a total of 40 malnutrition cases were occurred, of these 27(32.5%) of cases were with the condition of sever acute malnutrition.

This profile summarized the health status of the woreda based on HMIS report but the private health facilities not included in HMIS system.

CONCLUSION

- Upper respiratory tract infection and Diarrheal disease are the top leading causes of morbidity in adults and children.
- ANC4 coverage, pregnant woman screening for HIV, delivery by skilled birth attendant and contraceptive acceptance rate didn't achieve national target plan.
- Some of the woreda ketena have no safe water supply and latrine.
- Sever acute malnutrition was 32.5% of the woreda, but OTP service and CNB program have no in the woreda.
- HIV screening at PICT site service was low and also have no ART clinic in the woreda.
- Tracer drugs in the health facility were missing repeatedly in 2008 E.C.
- HMIS not include private facilities
- No mortality records in the woreda

RECOMMENDATION

- Health education on prevention and control of respiratory disease, hygiene and sanitation practices should be provided to the community through health facility and health extension worker.
- The woreda administration to improve the availability of water, toilet and hygiene practice.
- OTP, TSF and CBN program working on nutritional activities should have opened to the health facility.
- It is highly recommended to have ART clinic for the woreda.
- Any OPD clients and pregnant mothers visiting the health facility should have to be counseled and tested or screened for HIV.

- Strengthen health education about family planning and ANC at community level
- Should start implementation of HMIS in private health facilities of Addis Ababa because so many population receives services from the private facilities.
- Should start mortality recorded in the woreda.
- The woreda health facility need to plan pharmaceuticals earlier and pharmaceutical fund and supply agency (PFSA) should avail at least tracer drugs in uninterrupted manner.

Table 25.Action plan Developed Based on Major Problems Identified on Health Profile Assessment of Kolfe keranyo sub city, woreda 01.

S.NO	Identified Problems	Possible Solution	Responsible Body	Time Line
1	Stock out of tracer drugs	Early need assessment and planning of pharmaceutical in the woreda health facility.	Woreda 01 health center	February 30
		Purchase of tracer drugs	PFSA	
2	Low contraceptive acceptance rate	Assigned additional trained health workers in the service area	Woreda 01 health center	June 30
3.	Low ANC coverage	Assessment of reasons for lower ANC coverage	Woreda 01 health office	February 30
4.	High burden of Upper respiratory infection and diarrheal disease	Health education on prevention and control of respiratory disease, hygiene and sanitation practice	Woreda 01 health center	Routine

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CHAPTER V - SCIENTIFIC MANUSCRIPTS FOR PEER REVIEWED JOURNALS

Measles Outbreak Investigation in kolife keranyo sub city Addis Ababa region, Ethiopia, January 2017)

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ABSTRACT

Introduction: Measles is one of the leading causes of death among young children even though a safe and cost-effective vaccine is available. On February 1, 2017 an outbreak of Measles was reported from Kolfe keranyo sub city of Addis Ababa Region. We deployed to assess the distribution and associated risk factors of the outbreak in the district, to implement control measures.

Methods: We applied unmatched case control study with a case to control ratio of 1:2, to identify the possible risk factors of the outbreak. A face to face interview was conducted using structured questionnaire with adults, and care takers for children. Epi- info used to analyses the data.

Result: We identified 16 cases of Measles cases from 5/1/2017 to 3/3/2017.The first three cases were laboratory confirmed, the overall attack rate of 3 per 100,000 populations with case fatality rate of zero. Most of the cases (75%) were male. The age range of the cases was 9 months to 28 years with a median age of 5 years. Twelve percent of the cases were not vaccinated for measles. History of travelling prior to two weeks of onset were risk factor for developing the diseases and statistically significant with an OR of 5.492[95%CI= 1.283-23.507, P=0.022].

Conclusion and Recommendation: An outbreak of measles occurred in Kolfe keranyo sub city affecting primarily the age group under 5 years. History of travelling prior to two weeks of onset were risk factor for developing the diseases. The outbreak was controlled by conducting vaccination campaign and health education activities. We recommend strengthening measles routine vaccination activities and the health extension worker should enhance the awareness of the community towards measles infection, to prevent similar outbreaks.

Key Words: - Outbreak Investigation, Measles, Case Control, Kolfe keranyo sub city, AA

INTRODUCTION

Measles is an acute, highly contagious viral disease caused by measles virus. This highly contagious virus is transmitted primarily by respiratory droplets or airborne spray to mucous membranes in the upper respiratory tract or the conjunctiva. The virus is a member of the genus *Morbillivirus* of the *Paramyxoviridae* family. (1) Measles is one of the leading causes of death among young children even though a safe and cost-effective vaccine is available.

In 2016, there were 89,780 measles death occurred globally. Measles is still common in many developing countries. Particularly in parts of Africa and ASIA estimated 7 million people were affected by measles. Measles vaccination resulted in a 79% drop in measles death between 2000 and 2016 worldwide. (2)

In Ethiopia Several Measles outbreaks were experienced in 2016, a total of 348 cases had been confirmed and 40 outbreaks reported .39% have occurred among children less than five years. (3) In the previous two years measles outbreak not occur in the sub city. In the previous two years no Measles outbreak occur in the Kolfe Keranyo sub city. We deployed to assess the distribution and associated risk factors of the outbreak in the district, to implement and control measures.

METHODS AND MATERIALS

Study area and period: The outbreak investigation was conducted in Kolfe keranyo sub city Addis Ababa region. The sub city has 537 023 populations. It is located at the western parts of Addis Ababa city Administration 9.6 K.M away from the center of the city. The sub city is classified in to 15 Woreda and Woreda 03and04 are the Woreda in which the current outbreak of Measles happened. This investigation is conducted January 5 to March 3, 2017.

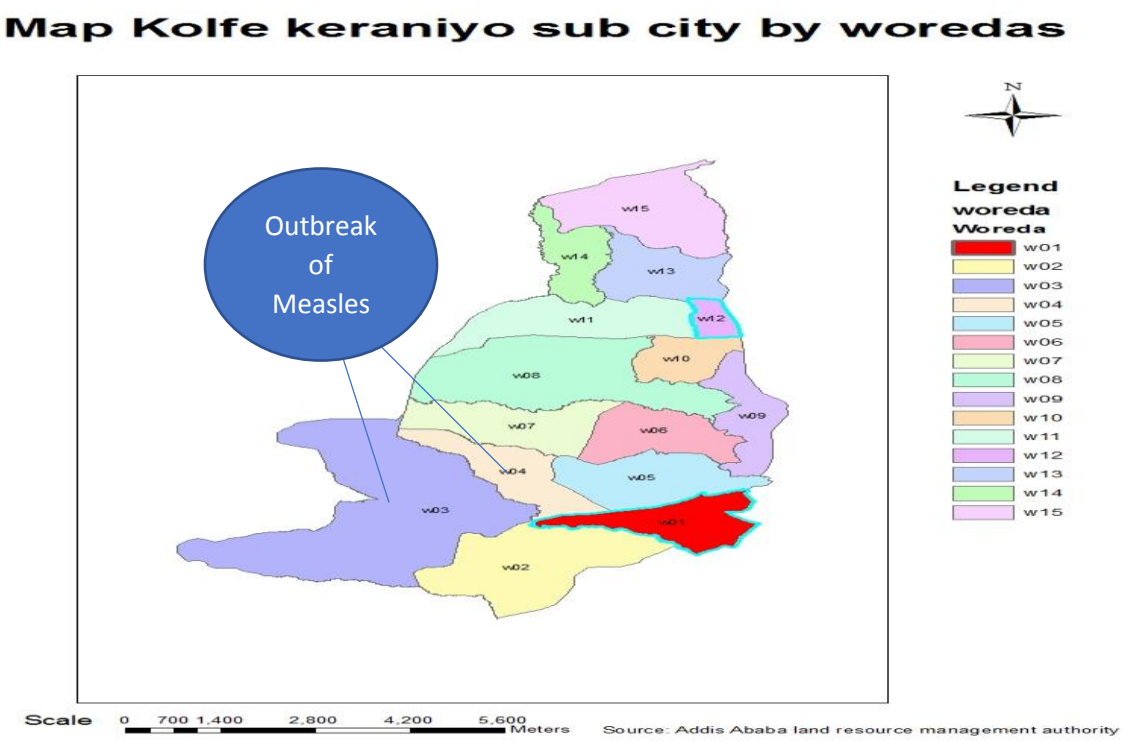

Figure 21: Kolfe Keranyo map showing the main sources of measles cases

Study Design- We applied a descriptive study of the collected line list of cases followed by unmatched case control study with a case to control ratio of 1:2, in order to identify the possible risk factors of the outbreak.

Data collection Tools and Methods: We reviewed the outpatient medical logbooks and medical record of cases at health centers. We also reviewed the laboratory findings of the first three cases. A line listing of suspected cases was collected from Woreda health office to describe the outbreak by place, person and time. A face to face interview was conducted using structured questionnaire with adult cases and controls and care takers in case they are children. Local language was used during the interview with the subjects. Cases was defined based on national standard measles case definition and a control was a neighborhood of cases who did not have history of sign and symptoms of measles during the same period.

Case Definition

- **Measles suspected cases at community level**: A community member should report any person with rash and fever to a health worker and also advise the person to go to a health facility.

- **Suspected measles case**: Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles.
- **Confirmed measles case**: A suspected case with laboratory conformation (positive IgM antibody) or epidemiological link to confirmed cases in an epidemic.
- **Measles outbreak**: Is laboratory confirmed when 3 or more laboratory confirmed measles IgM -positive cases occur in a health facility or district in a month.
- **Epidemiologically linked case**: A suspected measles case that has not had a specimen taken for serologic confirmation and is linked (in place, person and time) to a laboratory confirmed case; i.e., living in the same or in an adjacent district with a laboratory confirmed case where there is a likelihood of transmission; onset of rash of the two cases being within 30 days of each other.

Operational definition

- **House ventilation**: A living house consist at least one functional window for air ventilation
- **Knowing modes of transmission**: A person responds the mode transmission of measles disease from infected person to the uninfected individual via droplet (sneezing, cough)
- **Nutrition al status**: status of children aged 6- 59 months was determined by measuring the middle upper arm circumference (less than 12 cm is taken as malnutrition).

Data Analysis: The data analyzed by using Epi info. Descriptive data were analyzed for frequencies and proportion. Total Incidence Rate (IR), Age Attack Rate (AR), percentage and ratios were calculated. Relationship between number of cases and risk factors were calculated. Significance of the association was judging using the P-value and 95% CI for OR.

Ethical Consideration- Before filed investigation a formal letter was written by Kolfe keranyo sub city to 03 and 04 Woreda health office to get permission and facilitate the investigation process. Before data collection, the purpose the investigation clearly informed and an informed consent was taken from mothers or caregivers, any information related with personal identification was not used on the report.

RESULT

Description of Outbreak

We identified 16 cases of Measles from which the first three cases were laboratory confirmed using the conventional PCR. All of the cases reported were from Woreda 03 and 04. Among the cases, 12 (75%) were males. The age range of cases was from nine months to 28 years with median age of 5 years. At the beginning of the outbreak two cases were registered (including the index case) and two days later other cases were recorded.

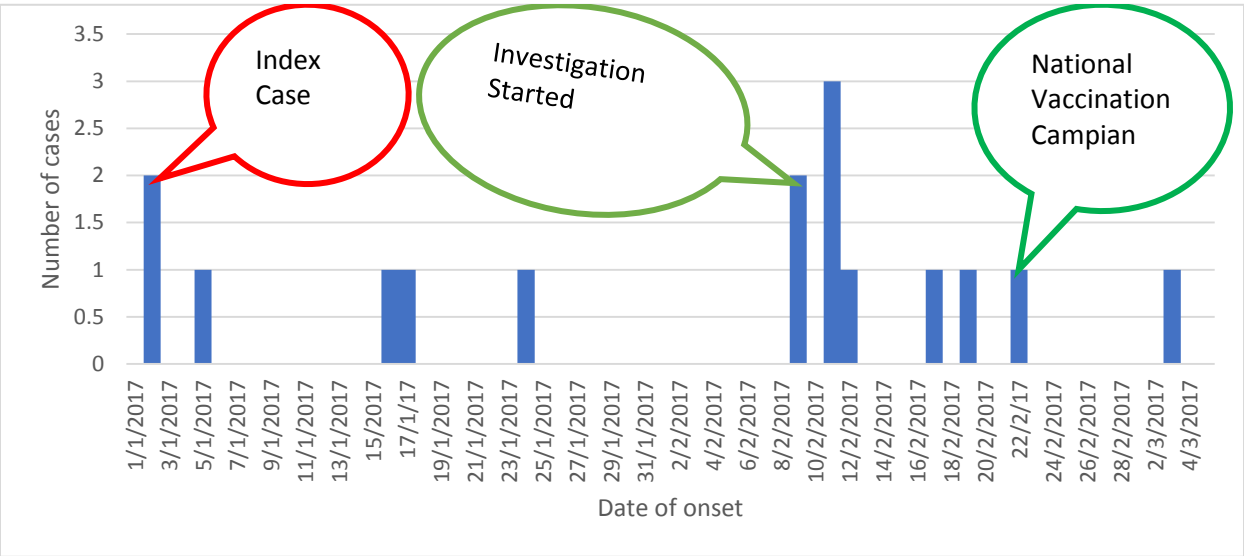

Figure 22: Epi-curve showing Distribution of Measles cases by date of on set at Kolfe keranyo sub city, 2017

From the total line listed cases, high proportion of the cases were in the age category of less than five years, 10(62.5%) followed by age category 5-15 years, who comprised 5(32%) of the cases. The Crude Attack rate of the sub city, Woreda 03 and Woreda 04 was 3/100,000, 13/100,000 and 11/100,000 respectively with case fatality rate of zero. During the Outbreak period one case had developed complication due to Measles infection.

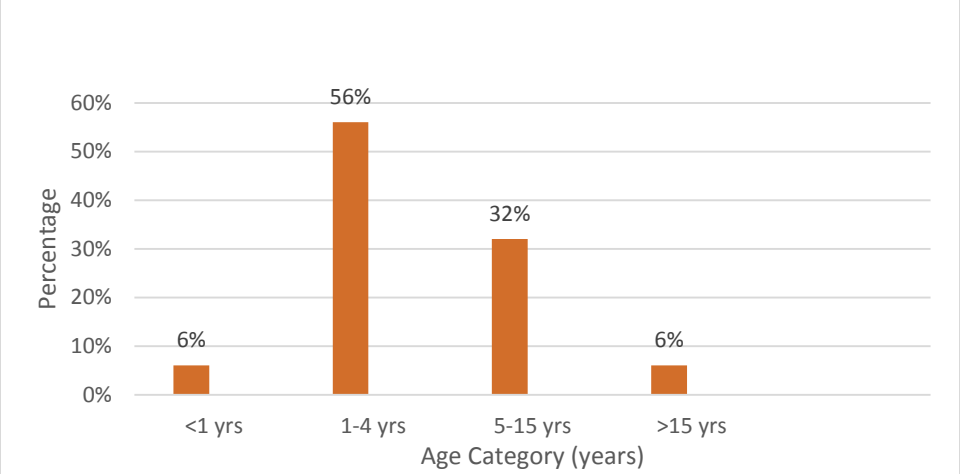

Figure 23: Distribution of Measles Cases by age in Kolfe Keranyo sub city from 5/1/2017-7/3/2017

In relation to the vaccination status, among the total cases, 13(82%) vaccinated, 2(12%) had not been vaccinated, and 1(6%) of the cases were with unknown measles vaccination status. The most frequent reported signs and symptoms during the outbreak were rash 16 (100%), Fever15 (94%), cough (94%), conjunctivitis (25%) and diarrhea (6%).

Analytical study

A case control study design was applied to identify the associated factors in relation to the outbreak. A total of 16 cases and 32 controls were participated in the study. Unmatched controls were selected from the same neighborhood.

History of travelling prior to two weeks of onset were risk factor for developing the diseases and statistically significant with an OR of 5.492[95%CI= 1.283-23.507, P=0.022].

Table 26: Multivariate analysis of independent factor associated with measles outbreak woreda 03 and 04, Kolfe keranyo sub city, from 5/1/2017-3/3/2017.

Risk factors	Crude OR(95%CI)	Adjusted OR (95% CI)	p-value
Travel history	5.571(1.476-21.024)	5.492(1.283-23.507)	0.022

Laboratory result of the Outbreak

Blood samples were collected from patients and sent to EPHI National Laboratory for conformation. Three specimens were tested positive for Measles IgM.

Intervention Conducted

After the team reaches at the affected Woreda, we started an active surveillance of Measles. The team gave a health education on the cases and mode of transmission measles disease in the schools, day-care and inform the mothers or the care giver, to minimize transmission of the virus, suspected cases isolated for four days after the onset of rash and conducted awareness raising and sensitization of health extension workers and school teachers. We observed the vaccination coverage data and cold chain management of the affected Woreda health facilities, the government health center recording refrigerators temperature regularly including holidays and weekends but the private health facilities were not monitor regularly.

A suspected Measles outbreak was diagnosed and reported to Addis Ababa health bureau. Then the measure given in alert protocol for Measles, namely prevention of transmission of measles infection and monitoring, asses and finding new cases to prevent and control magnitude and severity of measles outbreak infection. And shared information with neighboring sub cities and Oromia region for prevention and response of outbreaks. The Measles cases were managed by supportive treatment like Antibiotic, TTC, ORS, Vitamin A and Ant pain. The health Extension workers delivered health education for the communities and Measles vaccination campaign were conducted nationally of the targeted children between the age group 9 month to 15 years.

DISCUSSION

Although the highest cumulative incidence was in those aged <5 years, 38% were reported in those aged >5 years. This suggests that a significant immunity gap existed in this age group, likely due to the accumulation of susceptible individuals over several years. An additional booster dose at school entry, which is currently not part of the routine schedule in Ethiopia, would be of value. Recent outbreaks in Ethiopia have shown a higher proportion (67%) of cases were above 5 years. (3)

In 2017, Ethiopia conducted a nationwide vaccination campaign that showed an impact, even though it was conducted late in the outbreak course. A reduction in incidence of laboratory-confirmed measles case-patients was observed in all age groups following the nationwide

vaccination campaign for the targeted age group similar to what has been described in other African settings (4).

Based on results from the case control part of this study, history of travelling prior to two weeks of onset were risk factor for developing the diseases, which was almost similar to study done in Oromia region. (5) Which shows the above factor is key for prevention of similar outbreaks in the nation.

The Measles outbreak in different Woreda of the sub city especially in high vaccination coverage of Woreda have raised question over the immunization program. Failure of immunization also documented in other studies like Tigray regional states. (6)

During investigated the outbreak the main limitation was delayed of report and subsequently the investigation was not done at the beginning of the outbreak.

Conclusion: An outbreak of measles cases occurred in Kolfe keranyo sub city affecting primarily the age group under 5 years. History of travelling prior to two weeks of onset of a disease were risk factor for developing the diseases. The outbreak was controlled by conducting vaccination campaign and health education activities. We recommend strengthening measles routine vaccination activities and the health extension worker should enhance the awareness of the community towards measles infection, to prevent similar outbreaks.

Acknowledgment

We would like to acknowledge the district health officials, administrators and study participants for their full cooperation during the fieldwork.

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CHAPTER VI -ABSTRACTS FOR SCIENTIFIC PRESENTATION

6.1. Measles Outbreak Investigation in Kolfe Keranyo Sub City, Addis Ababa, Ethiopia 2017

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ABSTRACT

Introduction: Measles is one of the leading causes of death among young children even though a safe and cost-effective vaccine is available. In Ethiopia Several Measles outbreaks were experienced in 2016, a total of 348 cases had been confirmed and 40 outbreaks reported. On February 1, 2017 an outbreak of Measles was reported from Kolfe keranyo sub city of Addis Ababa Region. We deployed to assess the distribution and associated risk factors of the outbreak in the district, to implement control measures.

Methods: We applied unmatched case control study with a case to control ratio of 1:2, to identify the possible risk factors of the outbreak. Cases are those febrile individuals who present with generalized macula popular rash and one or more of cough, coryza and conjunctivitis. Controls were identified from neighbor of the case but with no any of the signs and symptoms of the disease. A face to face interview was conducted using structured questionnaire with adults, and care takers for children. Epi- info used to analyses the data.

Result: We identified 16 Measles cases from 5/1/2017 to 3/3/2017, the overall attack rate of 3 per 100,000 populations with case fatality rate of zero. Most of the cases (75%) were male and affecting primarily the age group under 5 years. The age range of the cases was 9 months to 28 years with a median age of 5 years. Twelve percent of the cases were not vaccinated for measles. History of travelling prior to two weeks of onset were risk factor for developing the diseases and statistically significant with an OR of 5.492[95%CI= 1.283-23.507, P=0.022].

Conclusion: An outbreak of measles cases occurred in Kolfe keranyo sub city affecting primarily the age group under 5 years. History of travelling prior to two weeks of onset were risk factor for developing the diseases the outbreak was controlled by conducting vaccination campaign and health education activities. We recommend strengthening measles routine vaccination activities and the health extension worker should enhance the awareness of the community towards measles infection.

Key Words: - Outbreak Investigation, Measles, Case Control, Kolfe keranyo sub city, AA

6.2. Five Year Malaria Surveillance Data Analysis Report of Kolfe Keranyo Sub City, Addis Ababa, Ethiopia, 2012-2016

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ABSTRACT

Introduction: Malaria is a Mosquito born infectious disease affecting humans and other animals caused by the protozoal parasite plasmodium. It is wide spread in tropical and sub-tropical regions, in 2015 there were 214 million malaria cases and 438,000 deaths worldwide, 90% of which occur in Africa. It is one of the main public health problem in Ethiopia, in 2015/2016 a total of Laboratory confirmed plus clinical malaria cases were 2,320,135 and 510 deaths were recorded. The goal of this study was to describe the five-year malaria trend of Kolfe Keranyo sub city, Addis Ababa region from 2012 to 2016.

Methods: Conducted Retrospective cross sectional study and the data would be analyzed using excel.

Result: A total estimate of 30,289 Malaria suspected fever examined cases and 3,756 confirmed cases were reported in the Kolfe Keranyo sub city from 2012 to2016.Among these,99.9% were outpatients. 36% were due to Plasmodium Falciparum. The peak malaria report year was 2016, with 24% of the total cases in the five-year period. Average Attack rate of malaria was 1.5 per 1000 population.

Conclusion and Recommendation: P. Vivax rate accounts higher than national. This may be due to migratory patients who may be relapsing of the disease or it may be due to the nature of malaria species. This needs further study, including burden of malaria in the high lands. The malaria report system shows significant improvement from year to year. Currently the majority of health facilities is incorporated into the PHEM network but variable should be filled properly in order to analyze all important surveillance indicators properly.

Keywords: Malaria, surveillance, Kolfe Keranyo Sub City, Addis Ababa, Ethiopia

CHAPTER VII - NARRATIVE SUMMARY OF DISASTER SITUATION VISITED

Pre-Harvest Public Health and Nutritional Risk Assessment in Hadiya, Kembata Tembaro, Seilte and Gurage Zones of SNNP Region

EXECUTIVE SUMMARY

The pre-harvest term (‘meher’) health and nutrition need assessment was conducted in November 2017 at Hadya, Kembata Tinbaro, and Gurage and Selite zones. From each zone, two districts were selected by Zone administrative and visited by a multi-agency team member. The multi-agency team comprised from regional and zone disaster risk management food security sector (DRMFSS), RHB, WFP, federal water and energy minister (FWEM), National Meteorology Agency (NMA) and International Risk Committee (IRC). Food and non-food data was collected by using questionnaires, checklists and through field visit and observation.

Diarrheal disease was recorded in the top five leading morbidity in the visited districts. The zones have functional multi sectoral coordination forum for the health sector, but relevant government, NGOs and UN agencies were not representing in the forum and also had not been conducting frequent of regular meeting. All visited districts have multi sectoral PHEM coordination forum and public health emergency preparedness and response plan, but all had not accessible emergency respond fund.

Routine therapeutic feeding program is established in all districts of assessed zones. In the visited districts, there are 14 establishing centers and 105 outpatient therapeutic program sites. Based on Gurage zone pre-harvest assessment finding, the ‘meher’ crop production achievement is 97% compared with the plan, however in all visited districts there was risk of food security especially due adverse weather condition in the recent year. During the assessment of visited zone, there was scabies outbreak which occurs to the assessment, however in Kenbata Tenbaro zone there was no outbreak six month prior to the assessment. Related to nutrition all Zones manifested adverse weather conditions (shortage and excess of rain) and which will be prone the visited woreda population in to food insecurity. In conclusion, PHEM coordinating forum both at zonal and Woreda level, they are mainly functional during emergency conditions and their plan is not budgeted and not enough. All the Zonal and Woreda PHEM coordinating forum should be strengthening both in technical capacity and budget and follow up should be strengthen by regional health office.

Introduction

Hadiya zone is located in the southern part of Ethiopia 430 kilometers from the capital city, Addis Ababa. Administratively the Zone is under SNNPR region and it has 12 Woredas including the main Hosana town. The population of the zone is estimated to be 1,650,101 million for which there are a total of 2 hospitals, 61 health centers and 316 health posts. There are also 483 primary schools and 65 secondary schools in the zone. The health governance structure is composed of zonal health department which manage the overall public health activities and there is health office in each Woredas, further more health extension workers are assigned in each Kebeles. Most of the populations in the Zone are farmers and 60% of their total agricultural products are from the Meher session.

Kebata Tembaro Zone which is located 400 km from the capital city Addis Ababa. The administrative and health governance structure of the Zone is similar with Hadiya Zone, which consists of 8 administrative Woredas including the main city Durame. The population of the Zone is estimated to be 864,453 for which there are a total of 1 hospital, 34 health centers and 134 health posts. Majority parts of the population are farmers and 70% of their total agricultural products are from the Meher session.

Seilte zone which is located 180km from the capital city of Addis Ababa, which consists of 6 administrative woreda including the main city Werabe. The population of the zone is estimated to be 1,007,661 for which there are a total of 1 hospital, 33 health center and 199 health posts, Majority of the population farmer and 60% of their agricultural product are from Meher session

Gurage zone which is located 155km from the capital city of Addis Ababa, which consists of 12administrative woreda including the main city wolkite and Butajra. The population of the zone is estimated to be 1,687,919 for which there are a total of 2 hospitals,75 health center and 412 health posts, Majority of the population farmer and 60% of their agricultural product are from Meher session. The ‘meher’ crop production achievement is 97% compared with the plan.

METHODS AND MATERIALS

Assessment Team

The assessment team is composed of multiple sectors which include EPHI, Regional DRMFSS, Regional Education Office, WFP and World Vision, Ethiopia. The team is sub grouped as a food need assessment group which mainly focuses to identify the food gap of the community and nonfood need assessment group whose main objective is to identify the health, nutritional, water and education current and anticipated gaps in the community.

Assessment Area and Period

The assessment is conducted at the Zonal offices and at two Woredas from each Zones, which are selected by the senior management of the Zone, using criteria of areas that are expected to have a major need gaps both in food and nonfood prospect. The information of selected Woredas are described below.

Hadya zone

A. East Badwacho Woreda - Located 80 km from the Zonal city Hosaena, which has a total population of 175,660 (51% are females) from which 27,420 are under five children. There is a total of 7 governmental health centers and 36 health posts. Administratively the Woreda is structured in to 36 kebeles in which one health extension worker is assigned for each kebele.

B. West Badwacho Woreda - Located 90 km from the Zonal city Hosaena, which has a total population of 108,164 (51% are females) from which 16,888 are under five children. There is a total of 4 governmental health centers and 22 health posts. Administratively the Woreda is structured in to 18 kebeles in which one health extension worker is assigned for each kebele.

Kebata Tembaro Zone

A. Tembaro Woreda - Located 90 km from the zonal city Durame, which has a total population of 137,779 from which 21,494 are under five children. There is a total of 3 governmental health centers and 22 health posts. Administratively the Woreda is structured in to 21 kebeles in which one health extension worker is assigned for each kebele.

B. Hadero Tuneto - Located 70 km from the Zonal city Durame, which has a total population of 107,644 (51 are females) from which 16,803 are under five children. There is a total of 3

governmental health centers and 20 health posts. Administratively the Woreda is structured in to 20 kebeles in which one health extension worker is assigned for each kebele.

Seilte zone

Lanfero woreda - Located 50 km from the Zonal city Werabe, which has a total population of 152,501 (51 are females) from which 23,790 are under five children. There is a total of 4 governmental health centers and 25 health posts. Administratively the Woreda is structured in to 25 kebeles in which one health extension worker is assigned for each kebele.

Gurage zone

Mareko woreda - Located 25 km from the Zonal city Butajera, which has a total population of 84,723 (51 are females) from which 13,521 are under five children. There is a total of 3 governmental health centers and 25 health posts. Administratively the Woreda is structured in to 25 kebeles in which one health extension worker is assigned for each kebele.

The assessment is conducted in a period between November 24 to December 15.

Assessment Techniques and Procedures

After briefing the objectives of the assessment by the team leader the Zonal Senior management teams selected Woredas (considering the time and logistic limitation) that are considered to have a major gap in food security and other nonfood needs of the community. The woreda also selected a Kebele to be visited using similar criteria with Zonal part. To assess the public health need of the community we used a pre-designed structured questionnaire to interview health officials at Zonal and Woreda level. Environmental and household observation is also applied to further support evidences got from interview.

ASSESSMENT FINDINGS

Public Health Emergency Coordination

All of the assessed Zones and all the six Woreda health offices reported that there is a multi-sectorial PHEM coordination forum majorly composed of respective PHEM office, water authority, agriculture office and women affairs. The Zonal officials also reported that the meeting frequency is regular at Zone level but, at Gurage zone and all assessed Wordas the forum is functional only during public health emergencies. Both at Zone and Woreda level there is PHEM preparedness plan but two Woreda of Hadya zone the plan has no demarcated budget source.

Hadiya Zone

Cause of Morbidity

Table 27: Top Five Causes of Morbidity in Under 5 and Adults in E.Badewacho and W.Badewacho Woreda, 2009 E.C

District		Morbidity Below Five Years	Morbidity above Five Years
E. Badewacho	1	pneumonia	Malaria
	2	Diarrhea non-bloody	Pneumonia
	3	Malaria	Abortion
	4	Other AFI	Typhoid fever
	5	Skin infection	Trauma
W. Badewacho	1	Pneumonia	Typhoid fever
	2	Diarrhea non-bloody	AFI
	3	AURI	Trauma
	4	AFI	Pneumonia
	5	Malaria	Skin infection

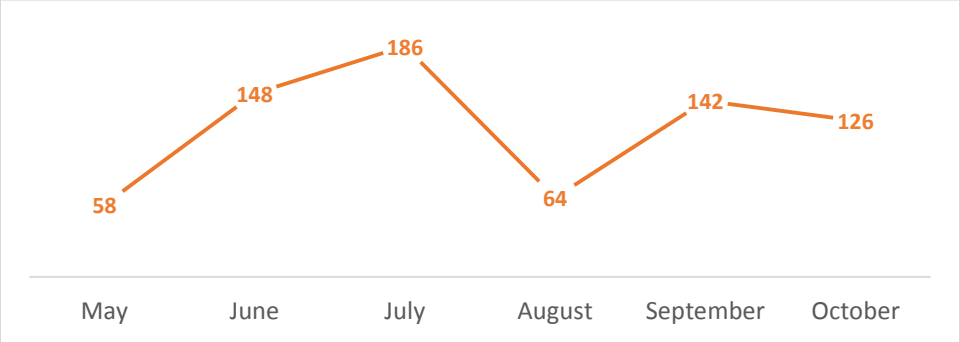

Figure 24: Trend of Malaria Cases in E.Badewacho Woreda from May 2009-October 2010 E.C

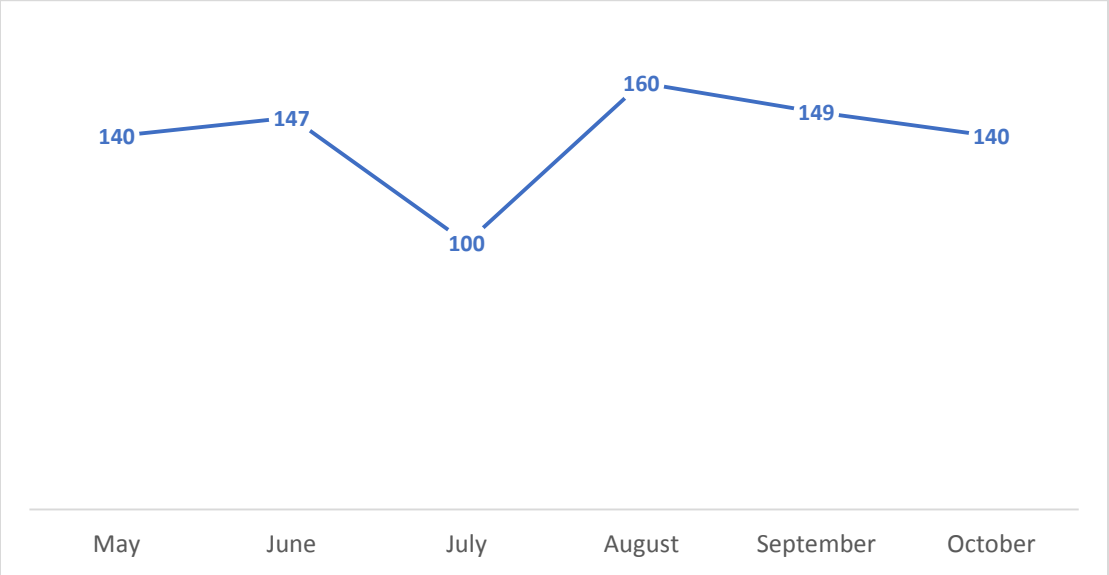

Figure 25 :Trend of Malaria Cases in W.Badewacho Woreda from May 2009-October 2010 E.C

Both Woredas reported that there was no death caused by four selected epidemic prone diseases (AWD, Malaria, Measles and Meningitis) in year 2009-2010.

Gurage Zone

Cause of Morbidity

Table 28:Top Five Causes of Morbidity in Under 5 and Adults in Mareko Woreda, 2009 E.C

S.no	Morbidity below five years	Morbidity above five years
1	Pneumonia	Pneumonia
2	Diarrhea non-blood	Diarrhea non-blood
3	All Respiratory disease	AFI
4	Diarrhea with DHN	All Respiratory disease
5	Malnutrition	Skin infection

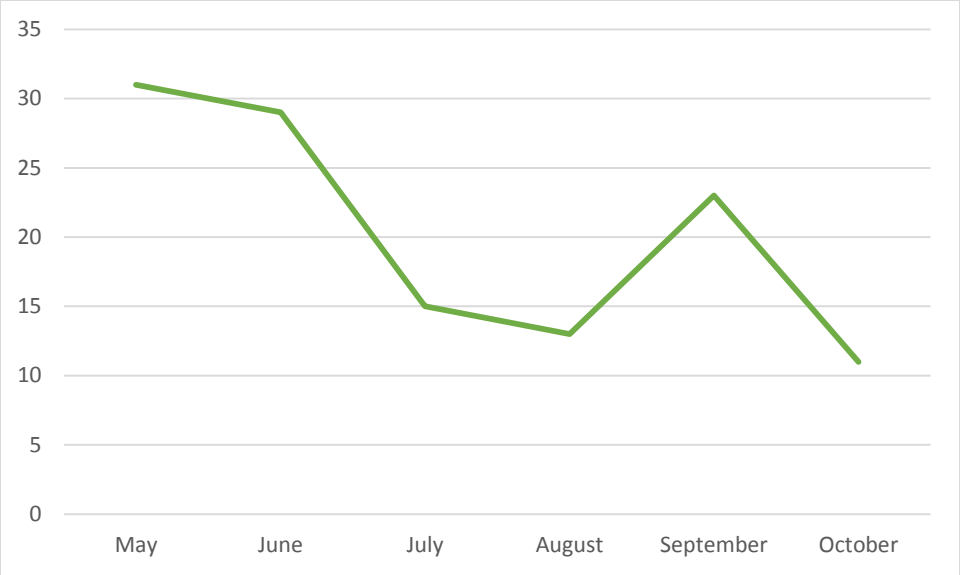

Figure 26: Trend of Malaria Cases in Mareko Woreda from May 2009-October 2010 E.C

Kenbata Tumbaro Zone

Cause of Morbidity

Table 29 :Top Five Causes of Morbidity in Under 5 and Adults in Hadero Tunto and Tumbaro Woreda, 2009 E.C

District		Morbidity Below Five Years	Morbidity above Five Years
Hadero Tunto	1	pneumonia	Typhoid fever
	2	All Respiratory Disease	Pneumonia
	3	Diarrhea non-bloody	Helminthiasis
	4	Malaria	Malaria
	5	Skin infection	AFI
Tumbaro	1	Pneumonia	AFI
	2	AFI	Typhoid fever
	3	Diarrhea non-blood	Helminthiasis
	4	Helminthiasis	Pneumonia
	5	Skin infection	Skin infection

Seilte Zone

Cause of Morbidity

Table 30: Top Five Causes of Morbidity in Under 5 and Adults in Lanfro Woreda, 2009 E.C

S.No	Morbidity below five years	Morbidity above five years
1	Pneumonia	Pneumonia
2	Diarrhea non-blood	Diarrhea non-blood
3	All Respiratory disease	AFI
4	AFI	All Respiratory disease
5	Other unspecified disease of eye	Typhoid

Drug and Supply Preparedness

Table 31: Drug and Supply preparedness in Hadiya and Kebata Tembaro Zone in 2010

	Hadiya Zone			Kembata Tembaro Zone		
Drug and Supplies	Total Required	Available	Gap	Total Required	Available	Gap
Coartem	2000 strip	12000 strips	800 strips	3000 strips	1500 strip	1500 strip
Oily CAF	-	-	-	9486 vials	0	9486 vials
Doxycycline	41 boxes	0	1000 capsule	1164 strip	0	1164 strip
Ringer lactate	601 bags	0	605 boxes	62832 bags	0	62832 bags
ORS	3250 packs	3257 packs	0	12,605 packs	0	12,605 packs
Amoxicillin Suspension	3000 bottles	800 bottles	2200 bottle	141 bottles	900 bottles	No gap
Chloroquine	3000 bottles	1000 bottle	2000 bottle	19393 bottles	384 bottles	19009 bottles
Quinine (po)	10 tins	0	10 tins	-	-	-
Vitamin A	645 Tin	936 Tin	0	300 Tin	300 Tin	0
RDT	2000 box	0	2000 box	1000 box	90 boxes	910 boxes
LP set	-	0	-	-	0	-
TI bottle	-	0	-	-	0	-
Glove	100 boxes	10 boxes	90 boxes	200 boxes	80 boxes	120 boxes
syringe	178 boxes	0	178box	200 boxes	100 boxes	100 boxes
F100	32 boxes	32 boxes	0	50 boxes	30 boxes	20 boxes

F75	71 boxes	32 boxes	39 boxes	80 boxes	60 boxes	20 boxes
RUTF	4300 boxes	500 boxes	3800 boxes	5000 boxes	1000 box	4000 boxes
Resomal	3 boxes	0	3 boxes	2 boxes	0	2 boxes
Sc Rx kit	11 kits	16 kits	0	12 kits	10 kits	02 kits
CTC kit	9	1	8	6	2	4
Individual clean Delivery kit	-	0	-	-	0	-

E. Badewacho health office reported that there is shortage of Coartem, RDT (Malaria), CTC kit Syringe and Gloves. Even if the zonal health department reported there is enough Coartm, RDT (malaria). E. badwacho Woreda stated no Coartm, RDT and CTC kit stock in the Woreda. The other assessed Woreda, W.Badewacho Woreda reported that there is Doxycycline and Amoxicillin suspension shortage. In Kebata Tembaro Zone, Hadero Tumto Woreda reported that there is only CTC shortage for possible AWD outbreak. The other assessed Woreda, Tumbaro Woreda reported that there is Ringer lactate, Vitamin A and Amoxicillin suspension shortage.

Table 32: Drug and Supply preparedness in Gurage and Seilte Zone in 2010

	Gurage Zone			Seilte Zone		
Drug and Supplies	Total Required	Available	Gap	Total Required	Available	Gap
Coartem	558 boxes	0	558 boxes	70 boxes	02 boxes	68 boxes
Oily CAF	5000 vials	0	5000 vials	-	0	-
Doxycycline	1000 dose	0	1000 dose	57 boxes	0	57 boxes
Ringer lactate	600 bags	150 bags	450 bags	1248 bag	0	1248 bag
ORS	3750 packs	12000 packs	0	6201 packs	0	6201 packs

Amoxicillin Suspension	3000 bottles	800 bottles	2200 bottle	200 bottles	100 bottles	100 bottles
Chloroquine	5000 bottles	1000 bottle	4000 bottles	278 tabs	0	278 tabs
Quinine (po)	-	0	-	7 pk	0	7 pk
Vitamin A	300Tin	372 Tin	0	5 Tin	53 Tin	0
RDT	100 boxes	0	100 boxes	114box	0	114 boxes
LP set	-	0	-	-	0	-
TI bottle	-	0	-	-	0	-
Glove	100 boxes	0	100 boxes	15 boxes	66 boxes	0
syringe	100 boxes	0	100box	20 boxes	11 boxes	9 boxes
F100	110 boxes	6 boxes	105 boxes	23 boxes	180 boxes	0
F75	110 boxes	6 boxes	105 boxes	23 boxes	2280 boxes	0
RUTF	734 boxes	250 boxes	486 boxes	711 boxes	689boxes	22 boxes
Resomal	110 boxes	0	110 boxes	9 boxes	0	9 boxes
Sc Rx kit	0 kit	9 kits	0	6 kits	4 kits	02 kits
CTC kit	13 kits	9 kits		3 kits	1 kit	02 kits
Individual clean Delivery kit	-	0	-	50 kits	48 kits	02 kits

Mareko health office reported that there is shortage of Ringer Lactate, Syringe and Gloves. Even if the zonal health department reported there is enough Ringer Lactate. Mareko Woreda stated no Ringer Lactate in the Woreda. The other assessed Zone, In Seilte Zone, Lanfero Woreda reported that there is only RDT shortage for Meningitis.

Risk Factors for Selected Diseases

Table 33 : Analysis of Risk Factors in Selected Six Woreda of Hadiya, Kebata Tembaro, Gurage and Seilte Zone in 2010 E.C

Disease	Risk factors	E. Badewacho		W. Badewacho		Tumbaro		Hadero Tunto		Mareko		Lanforo	
		yes	No	yes	No	yes	No	Yes	No	yes	No	yes	No
Malaria	Malaria endemic area	✓		✓		✓		✓		✓		✓	
	Presence of malaria breeding area	✓		✓		✓		✓		✓		✓	
	Interrupted or potentially interrupted river	✓			✓	✓		✓		✓		✓	
	Unprotected irrigation area	✓			✓	✓		✓			✓	✓	
	LLIS coverage below 80%	✓			✓	✓		✓		✓		✓	
	IRS coverage	27.7%		78%		84 %		80 %		96 %		100 %	
	Depleted prevention	✓		✓		✓		✓		✓		✓	
	Total population malaria area	175,660		90,000		70,173		107,644		84,723		152,505	
Meningitis	Presence of epidemic the past 3 years		✓		✓		✓		✓		✓		✓

	Vaccination conducted in the past 3 years		✓		✓		✓		✓		✓		
AWD	AWD epidemic in the last 3 years	✓			✓	✓		✓			✓		✓
	Latrine coverage	65 %		100 %		93 %		100 %		69 %		100 %	
	Latrine utilization	63 %		86%		86 %		90 %		62 %		96 %	
	Safe water coverage	65 %		36%		58 %		36 %		45 %		33 %	
Measles	Presence of measles out break		✓		✓		✓		✓		✓		✓
	Measles vaccination coverage	92 %		90%		95 %		96 %		95 %		96 %	
	SIA conducted in 2009 E.C		✓		✓		✓		✓		✓		✓

Incidence of Outbreak

In Hadiya Zone, the Zonal health department reported that from July to November there was only scabies outbreak in two Woredas of the Zone (W.Badewacho and E.Badewacho) with over all 5915 cases and no mortality.

In other perspective in Kembata Tembaro Zone, the Zonal health department reported that there was no outbreak in the Zone in the past three months. Looking in to assessed Woredas, there was no outbreak report in Hadero Tunto Woreda and Tambaro Woreda in the past 3 months.

In Seilte zone, the zonal health department reported that from October-November 2010 there was only scabies outbreak with over all 5490 cases and no mortality. Looking in to the assessed Woreda, there was no outbreak report in Lanforo Woreda in the past 3 months.

In Gurage zone, the zonal health department reported that from June-November 2010 there was only scabies outbreak in one Woreda of the zone (Mareko) with over all 3448 cases and no mortality.

Nutritional Status

Routine therapeutic feeding program is established in all districts of assessed zones. In the visited districts, there are 14 establishing centers and 105 outpatient therapeutic program sites.

All Zones manifested adverse weather conditions (shortage and excess of rain) and which will be prone the visited woreda population in to food insecurity. Both mild and server malnutrition is sharply increasing in all assessed site.

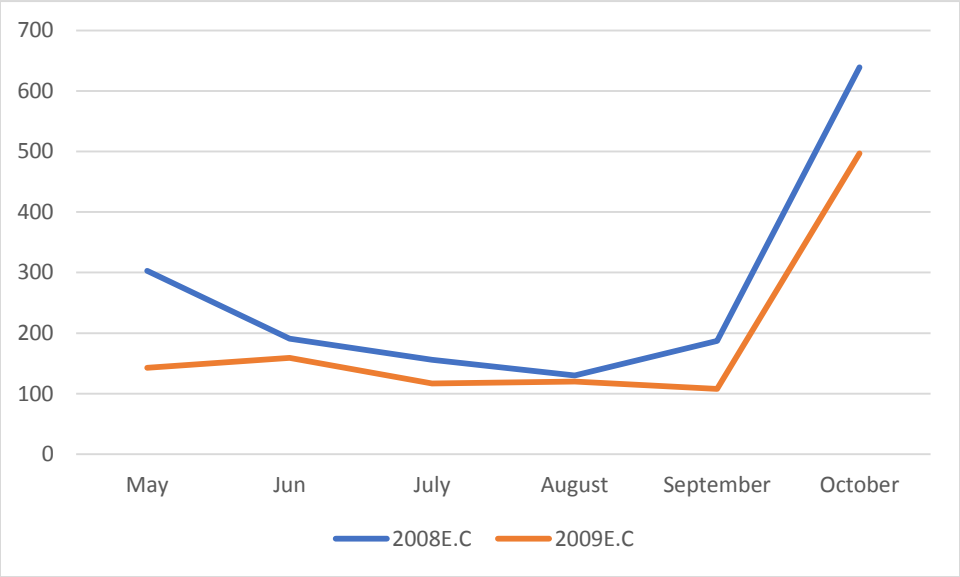

Figure 27: Trend of Overall OTP Cases in Seilte Zone in 2008 and 2009 E.C

Public Health Emergency Risks

Table 34: Distribution of Expected Outbreak Risk in Hadiya, Kembata Tembaro,Seilte and Gurage Zone in the coming six months

Zone	Woreda at Risk	Type of Risk	Population at Risk
Hadya	Shashego	Malaria, AWD, Meningitis	1,650,101
	E. Badewacho		
	W.Badewacho		
	Soro		
	Gibe		
Kenbata Tenbaro	Tumbaro	Malaria, AWD, Meningitis	864,453
	Hadero Tunto		
	Kachabira		
	Domboya		
	Kadida Gemila		
	Angacha		
	Durame		
Seilte	Lanfero	Malaria, AWD, Meningitis	1,007,661
	Dalocha		
	Sankoro		
	Seilte		
	Hulbarege		
	Werabe		
Gurege	Abeshege	Malaria, AWD Meningitis	1,687,919
	Cheha		
	Enemore		
	Ezha		
	Gedebano Gutazere		
	Kebena		
	Mareko		
	Meskan		
	Muhur Aklil		

CONCLUSIONS

- Even if there is a PHEM coordinating forum both at zonal and Woreda level, they are mainly functional during emergency conditions and their plan is not budgeted and not enough.
- Diarrhea is the leading cause of Morbidity both at zonal and Woreda Level.
- Scabies is the only reported outbreak in the Zone.
- Most of emergency supplies needed in the Zone are not enough to control future possible outbreaks.
- Both W.Badewacho and E.Badewacho Woredas have identified major high risk area for malaria and have started intervention activities.
- Both mild and server malnutrition is sharply increasing in the community.

RECOMMENDATIONS

- All the Zonal and Woreda PHEM coordinating forum should be strengthening both in technical capacity and budget and follow up should be strengthen by regional health office.
- The federal ministry of health, SNNPR regional health office and partners should avail necessary emergency drug and supplies based on the indicated gap.
- Both mild and server malnutrition is sharply increasing in the community which needs an urgent agricultural support and strengthen of OTP and SC sites.
- Data handling, quality and communication between Zones and Woreda need much improvement.
- Capacity building activities is needed for PHEM offices both at Zone and Woreda level on overall public health emergency preparedness
- All the Zone and Woreda should avail safe water supply.

CHAPTER VIII - PROTOCOL/PROPOSAL FOR EPIDEMIOLOGIC RESEARCH PROJECT

Magnitude of Measles cases and Rik Factor Associated with Measles Among Under 15 Children Presenting to the Health facilities of Kolfe Keranyo sub city, Addis Ababa, Ethiopia.

SUMMERY

Introduction: Measles is an acute viral illness caused by a virus in the family paramyxovirus, genus *Morbillivirus*. Measles is characterized by a prodromal of fever (as high as 105°F) and malaise, cough, coryza, and conjunctivitis, followed by a maculopapular rash. Measles is among the leading causes of child morbidity and mortality worldwide. Despite remarkable progress in the control of measles, measles still continues to claim the lives of millions of children every year around the world. The majority of this mortality takes place in the world's poorest countries, particularly in sub-Saharan Africa. In Ethiopia 1,912 confirmed measles cases reported in 2017.Incidence high especially in childeren1-4 years of age. The main objective of this study is to assess the magnitude of Measles case and determine the risk factors associated with development of Measles among under 15 children presenting to the health Facility of Kolfe keranyo sub city.

Methods: A Facility based cross sectional study design will be conducted to assess the magnitude of Measles case and determine the risk factors associated with development of Measles, the study team will be deployed to the study sites to collect the data from the selected study units by following data collection procedures (Express greeting-take verbal consent- collect the data based on the questionnaire - express thanks). Data collection tools included questionnaire, anthropometric assessment. The data will be entered and analyses by using in Epi Info version 7.3.0.9, Statistical significance of the variables will be evaluated by logistics regression analytical tests by using Odds ratio (OR), p-value of 0.05 and confidence interval 95%.

Work plan: The project work proposal will be completed in May, 14 2018. Data collection will be started in July 2018 and dissemination of the study result will be finalized in December 30 2018.

Budget: The total estimated budget for this project will be 57,025 ETH Birr. It includes transportation, Personal periderm, stationaries and training lodge.

INTRODUCTION

Measles is an acute viral illness caused by a virus in the family paramyxovirus, genus *Morbillivirus*. Measles is characterized by a prodrome of fever (as high as 105°F) and malaise, cough, coryza, and conjunctivitis, followed by a maculopapular rash. (1) The rash spreads from head to trunk to lower extremities. Measles is usually a mild or moderately severe illness. However, measles can result in complications such as pneumonia, encephalitis, and death. It is more common in preschool age and spreads through respiratory tract by droplet spray, mostly during the prodromal period (7 days before and 7 days after rash appears). (2) Approximately one case of encephalitis and two to three deaths may occur for every 1,000 reported measles cases. (3) Measles is highly communicable, with greater than 90% secondary attack rates among susceptible persons (4,5). In the pre-vaccination period, Measles used to be a universal childhood disease with attack rates that went beyond 90%.

Before a vaccine was available, infection with measles virus was nearly universal during childhood, and more than 90% of persons were immune by age 15 years. Measles is still a common and often fatal disease in developing countries. The World Health Organization estimates there were 89,780 deaths globally from measles in 2016. (6)

LITERATURE REVIEW

Measles vaccine is the best public health tool for the prevention of the disease. Despite its extensive use, however, measles cases continue to occur for a variety of reasons. In 2001, the World Health Organization (WHO) estimated that about 30 million cases and over 700 000 deaths from measles occur annually in developing countries. Most deaths follow complications such as pneumonia, croup and diarrhea, and are also frequently associated with malnutrition. In addition, measles may result in long-term health problems including blindness, deafness, chronic lung disease, poor growth and recurrent infections. (7)

In countries where immunization rates are low, virtually all unimmunized children will have been infected with measles by the age of 5 years. About half the cases occur in children below one year, the age group in which most deaths occur. In more developed and industrialized countries measles is now a disease of older children and young adults, who are unimmunized or in whom primary immunization has failed. At particularly high risk of measles are the urban poor, who live in areas where immunization coverage is low and where overcrowding aids transmission. Special efforts are needed to reach these children with immunization and other health services. (7)

In 2016, there were 89,780 measles death globally. Measles is still common in many developing countries. Particularly in parts of Africa and ASIA estimated 7 million people were affected by measles in 2016 Measles vaccination resulted in a 79% drop in measles death between 2000 and 2016 worldwide. (6)

However, since then, there has been a substantial increase in measles transmission, mostly in western and central-eastern parts of the Region, with the largest outbreaks occurring in Bulgaria (2009–2010), France (2009–2011), Romania (2011–2012) and Ukraine (2012). The number of measles cases reported to the WHO European Region was 30 625 in 2010, 37 073 in 2011 and 26 188 in 2012 (as reported by 17 June 2013). In Ethiopia, Measles vaccine is administered under the Expanded Program of Immunization (EPI). Though initiatives such as supplementary immunization campaigns have markedly increased frequency of Measles immunization among target populations, associated factors as low immunization coverage and floating populations are thought to be important causes of high Measles incidence in the country.(8,9) Malnutrition and low vaccine efficacy due to cold chain related issues with poor coverage is known to make Measles endemic in Ethiopia .(8) In most industrialized countries high vaccine coverage (> 80 - 90%), good surveillance and a two-dose vaccine strategy have reduced Measles burden.(7) Effective programs of childhood vaccination can help to reduce this mortality Expanded Program on Immunization (EPI) emphasizes routine vaccination coverage and long-term sustainability for vaccine preventable childhood diseases by emphasizing national and sub-national Immunization Days. Ministry of Health aims to achieve the target of 90% routine immunization coverage of all EPI vaccines with at least 80% coverage in every district by 2012. However, Measles vaccination coverage has increased only slightly or remained stagnated in some provinces in the last few years. Variable vaccination coverage may be related to increasing inequities. Regarding vaccine effectiveness Measles vaccine has been developed over decades to prevent and control Measles. Vaccination efficacy is high when appropriately utilized and stored; however, developing countries like Ethiopia have shown variable effectiveness due to cold chain and vaccine maintenance related issues.

Statement of the problem

Measles is among the leading causes of child morbidity and mortality worldwide. Despite remarkable progress in the control of measles, measles still continues to claim the lives of millions of children every year around the world. The majority of this mortality takes place in the world's poorest countries, particularly in sub-Saharan Africa, where a combination of factors such as

crowding, exposure at a younger age and malnutrition contribute substantially to the high case fatality rates (11).

Although a safe and cost-effective vaccine is available, Measles is still a leading cause of death among children belonging to low income countries. Around 89,780 Measles related deaths were reported in 2016, mostly in African and South Asian countries with poor health infrastructures.

In Ethiopia 1,912 confirmed measles cases reported in 2017.Incidence high especially in childeren1-4 years of age (6). Measles cases reported throughout the year in the district and also measles outbreak occurred in 2017 in the district.

Significant of the study

Measles cases reported throughout the year in the district and also measles outbreak occurred in 2017 in the district. However, in the same year 2017 the district measles vaccination coverage up to 100%. There was a discrepancy between coverage of measles vaccination and an occurrence of the measles disease. Though the discrepancy would be improved by identifying factors associated to measles case and creating awareness of the population about vaccination.

OBJECTIVE

General objective

- To assess the Magnitude of Measles case and determine the risk factors associated with development of Measles among under 15 children presenting to the health Facility of Kolfe keranyo sub city.

Specific Objectives

- To assess the magnitude of measles case in Kolfe keranyo sub city health facility.
- To determine the risk factors associated with development of measles case.

METHODS AND MATERIAL

Study area: This study will be conducted in Kolfe keranyo sub city health facility. The sub city has 537 023 populations. It is located at the western parts of Addis Ababa city Administration 9.6 K.M away from the center of the city. The sub city has 11 functional public health centers and 1 Health post, 1 federal hospital, two general and two primary private hospitals, two NGO health

centers, two NGO clinics which delivery health care service to the community. According to administrative report, the current coverage of measles immunization is156%.

Source population: Children aged less than 15 years who is living in Kolfe keranyo sub city

Study Population: Children aged less than 15 years with Measles who is living Kolfe Keranyo Sub city and visiting the health facility.

Sample size and Sampling procedure: All Children less than 15 years with measles case who present to health facilities between July-December, 2018 will be eligible for enrolment in the study.

Study period: The study will be done July 1/ 2018-December 30/2018

Study Design: Facility based cross-sectional study design will be employed.

Data collection tool and procedures

Initially the data collectors and supervisors will be taking three-day training on their specific duties. Then the study team will be deployed to the study sites to collect the data from the selected study units by following the data collection procedures (Express greeting-take verbal consent-collect the data based on the questionnaire - express thanks). Data collection tools included questionnaire, anthropometric assessment. children will be included in the study who were up to 15 years of age suffering with a generalized rash lasting greater than or equal to 3 days, temperature greater than or equal to 101°F / 38.4°C and cough or coryza, or conjunctivitis in health facility (outpatients, emergency department) of Kolfe keranyo sub city and whose parents were residents of Kolfe keranyo sub city at least for last one year.

Case definitions

- **Measles suspected cases at community level:** A community member should report any person with rash and fever to a health worker and also advise the person to go to a health facility.
- **Suspected measles case:** Any person with fever and maculopapular (non-vesicular) generalized rash and cough, coryza or conjunctivitis (red eyes) or any person in whom a clinician suspects measles.
- **Confirmed measles case:** A suspected case with laboratory conformation (positive IgM antibody) or epidemiological link to confirmed cases in an epidemic.

- **Measles outbreak:** Is laboratory confirmed when 3 or more laboratory confirmed measles IgM -positive cases occur in a health facility or district in a month.

Operational definition

- **House ventilation**: A living house consist at least one functional window for air ventilation
- **Knowing modes of transmission**: A person responds the mode transmission of measles disease from infected person to the uninfected individual via droplet (sneezing, cough)
- **Nutrition al status**: Nutritional status of children aged 6- 59 months was determined by measuring the middle upper arm circumference (less than 12 cm is taken as malnutrition).

Variable specification

Dependent variable: Measles infection

Independent variables:

- Age and Sex
- Measles vaccination status
- Over-crowding
- Travel history
- Contact history
- Awareness on mode of transmission of measles infection
- Awareness on prevention/control of measles infection
- Nutritional status

Inclusion /exclusion criteria

Inclusion criteria: children will be included in the study who were up to 15 years of age suffering with Measles case.

Exclusion criteria- children will be do not included in the study who were severely ill because of complication.

Data Analysis

The data will be entered and analyses by using in Epi Info version 7.3.0.9, Statistical significance of the variables will be evaluated by logistics regression analytical tests by using Odds ratio (OR), p-value of 0.05 and confidence interval 95%.

Ethical consideration

The study will be conducted following permission which will be obtained from Institution of research board (IRB) and support letter will be requested from the Regional Health Bureau and sub city health offices accordingly. During data collection period, informed consent will be taken from each study subject. Through the consent the autonomies, privacy and justice about the individual will be addressed.

Data Dissemination

We will be prepared written report of soft copies and share to, Kolfe keranyo sub city, A.A regional health bureau, and A.A.U school of public health and EFETP mentors.

Work plan

Table 35: Schedule for assess the magnitude of Measles case and determine the risk factors associated with development of Measles among under 15 children presenting to the health Facility of Kolfe keranyo sub city.

s.no	Description of Tasks	Responsible	Time Line Jan 1/ 2018_December 30/2018			
			Day Jan 1	Jan2-May 30	July1-Dec 30	
1.	Travel to sub city	Resident				
2.	Proposal preparation	Resident				
3.	Reviewing proposal	Resident				
4.	Ethical clearance	Resident				
5.	Training will give to data collector	Resident				
6.	Data collection	Data collector				
7.	Data processing and analysis	Resident				
8	Submission of first draft	Resident				
9.	Submission of total draft	Resident				
10.	Final approval	Resident				

Budget

Table 36: Budget for assess the magnitude of Measles case and determine the risk factors associated with development of Measles among children presenting to the health Facility of Kolfe keranyo sub city.

S-No	Budget category	Item personnel	Unit cost (birr)	Total cost
1.		Transportation fee	150	4200
2.	Periderm	Principal Investigator	400	6000
		Supervisor	300	9000
		Data collector	150	22,500
		Data clerk	150	1500
3.	Supplies	Pen	5	100
		Pencil	2	20
		Eraser	5	25
		Sharpener	15	150
		Flip chart	120	360
		Paper	5	510
		Photo copy	1500	4500
		Marker	12	120
		Printing paper	120	240
4	Training	Refreshment	150	4800
		Hall rent	1500	3000
		Grand Total	4574	57,025

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Annex's

Annex I: Data collection tools For Measles outbreak

*Study participant status

Interviewee status: Case ----- Control----- Date MM/DD/YY___/___/___/ ID No_____

Patient Name_____ date of Data collection_____

Region_____ Sub city_____ Woreda_____ Keble ____Phone_____

I. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex	1. Male 2. Female
1.2	Age	years_____ Months_____
1.3	Occupation of the patients	1. Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't 8. Other (specify)_____
1.4	Family Occupation (HH head)	Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't 8. Other (specify)_____
1.5	Religion	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Other (specify)_____

1.6	Ethnic group	1. Oromo 2. Tigre 3. Amhara 4. Other (specify)
1.7	Educational level of the patient	1. Illiterate 2. Read and write 3. Elementary 4. Secondary 5. Above secondary 6.N/A
1.8	Educational level of the family	1. Illiterate 2. Read and write 3. Elementary 4. Secondary 5. Above secondary
1.9	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated, 6 N/A
1.10	Family size	_____

1.11	Is there any sick person with rash, fever, running nose/conductivities (illness)? In the family?	1. Yes 2. No

1.12	If yes, number of sick person	_____

II. Clinical History of Diseases: for the case only

2.1	What was the symptom?	1.fever 2.Rash 3.cough, 4.coryza (runny nose), 5. conjunctivitis (red eyes) 7. Ear discharge 8. pneumonia 10. Vomiting 11. Others_____
2.2	Ask ONLY if complication	Pneumonia: yes no Cornea: yes no Blindness: yes no Convolution yes no Otitis media (ear discharge): yes no diarrhea: yes no Feeding problem yes no
2.2	Date of rash on set	/ /
2.3	Date seen at health facility	/ /
2.4	Did you (he/she) take treatment?	1.Yes 2.No

2.5	If yes, treatment taken	1.ORS 2.Antibiotics 3.Vitamin A 4.Supplementary food 5. TTC ointment 6.Anti pyretic 7.Others given_____
2.6	Location when rash started?	---------_____
2.7	Did you recover after the treatment?	1.cure 2. partially 3. deteriorated/disabled 4.death
2.9	Illness duration before visiting the health facility	--------- in days/hours

III. Risk factor

3.1	Did you have been vaccinated for measles?	1.Yes 2.No 3.Unknow 4.Not applicable
3.2	Number of vaccine doses received	1.one dose 2. two doses 3.three and above
3.3	Age of vaccination at first vaccinated.	__----------_____

3.4	If not vaccinated why?	1.lack of knowledge about vaccination campaign 2.absence during vaccination campaign 3.other (specify)
3.5	Did you have any travel history 7-18 days to areas with active measles cases before onset of symptoms?	1.Yes 2.No If Yes, where _____
3.6	Did you contact with a person with measles symptoms within the last 2-3 weeks?	1.Yes 2.No
3.7	Do you have any travel history four days before and after rash onset	1.Yes 2. No If yes where _____
3.8	Do you have any contact history with someone else four days before and after rash onset	1.yes 2.No
3.9	If Yes to question 3.5 place of travel	1.School 2.Neighbor 3.Market 4.Other_____
3.10	Do you know modes of transmission for measles?	1.Yes 2.No

		3. If yes specify_____ __
3.11	Did you ever have measles infection?	1.Yes 2. No 3. Don't know
3.12	Nutritional status of the cases	1.Normal 2.Moderate 3.Severely malnourished
3.14	What is the estimated area of the house in M2?	_____
3.15	House condition?	ventilated not-ventilated
3.16	Distance from house to HC?	greater than 5 km equal or less than 5 km
3.17	Where did you go first when you get ill?	1. Health Facility 2. Traditional Healers 3.Holy water 4.Stayed at home 5.Other (specify)
3.18	How do you think people get measles?	1. Contact with a virus from ill person 2. From God 3. Bad attitude of other people 4. Other(Specify)
3.19	Do you Know measles is vaccine preventable?	1. Yes 2. No

		3. I don't Know
3.20	Who do you think can be affected by measles?	1. Children of aged less than 5 years 2. Children of aged less than 18 years 3. Women of any ages 4. Any age groups of both male and women Other(specify): _____
3.21	How do you think measles can be cured?	1. Using modern medicine 2. Using traditional Medicine 3. Holly water 4. By feeding nutritious foods 5. Keeping the sick person indoor 6. Other(Specify)_

Annex II: Questionnaire for evaluation of surveillance system-Kolfe keranyo sub city Addis Ababa region, Ethiopia 2017

1.1 Sub city Level Questionnaire

Respondent_____

Interviewer: _____

Date_____

General

1. Is there a national manual for malaria surveillance? Yes/ No

2. *If yes*, describe (last update, diseases included, case definitions, surveillance and control,

Integrated or different for malaria disease): _____.

3. Do you have standard case definitions for the Country's priority diseases like

Malaria? Yes / No

4. If yes, observe is the standard case definition for

malaria disease_____

5. Is the Sub city level responsible for providing surveillance forms to the health facilities?

Yes/No

6. *If yes*, have you lacked appropriate surveillance forms at any time during the last 6 months?

Yes / No

7. What are the reporting health facilities for the surveillance system?

a. Public health facilities b. NGO health facilities

c. Military health facilities d. Private health facilities

e. Others_____

8. Number of reports in the last 3 months compared to expected number

Weekly: ___/12 times the number of Woreda

9. Number of weekly reports received on time: ____/12 times the number of Woreda

10. How do you report to the next high level? a. Mail b. Fax C. telephone d. Radio e. Electronic f. Other

11. Does the sub city level describe data by person (case based, outbreaks, and sentinel)? Yes/ No

If yes, (Obs) Observed description of data by age and sex

12. Describe data by place, time and person? Yes/No

13. Perform trend analysis? Yes/ No

If yes, (Obs) line graph of cases by time and list disease(s) for which line graph is

14. Observed a._____ b._____ c._____ d._____ e._____

15. Do the sub city have an action threshold defined for malaria? Yes / No

16. Who is responsible for the analysis of the collected data? _____

17. How often do you analyze the collected data?

a. Daily b. Weekly c. Every 2 weeks d. Monthly e. Quarterly f. As needed

18. Do you have an appropriate denominator establish the threshold? Yes / No

19. If yes, (Obs) presence of demographic data (E.g. population by Woreda and hard to reach groups)

Outbreak Investigation

20. Is there malaria outbreak in the sub city in the last year? Yes/No

If yes, number of outbreaks investigated: _____

21. Number of outbreaks investigated and in which risk factors were looked for: ___.

22. Number of outbreaks in which findings were used for action [Observe report] _____

23. Number of Woreda that looked for risk factors [observe in reports]

24. Number of Woreda that used the data for action [observe in final report] _____

Epidemic preparedness (relevant for epidemic prone diseases

25. Dose the sub city established epidemic management committee? Yes/No

26. Do you have plan for epidemic preparedness and response? Yes/No

If yes, (Obs), a written plan of epidemic preparedness and response

27. Has the sub city had emergency stocks of drugs, vaccines, and supplies at all times in past 1 years? Yes/No

28. Has the sub city experienced shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)? Yes/ No

29. Doses the standard case management protocol for malaria exists in all health facilities? Yes/No

30. Is there a budget line for epidemic response? Yes / No

If yes, Obs. minutes (or report) of meetings of epidemic management committee

31. Does the sub city have a rapid response team for epidemic? Yes/No

Response to epidemics

32. Dose the epidemic responded within 48 hours of notification from sub city level? Yes/No

If yes, (Obs) (from written reports with trend and intervention)

Feedback

33. Dose a report is regularly produced to disseminate surveillance data from the sub city? Yes/No

If, yes (Obs): the presence of a report of surveillance data

34. How many feedback reports has the sub city level produced in the last year? _____

Supervision

35. Did you conduct supervision last 6month? Yes/No

36. If yes, how many supervisory visits have you made in the last 6 months? ____

37. If no, what is reasons for not making all required supervisory visits.

(Text)_____

Training

38. Have you received any post-basic training in epidemic management? Yes/No

If yes, specify when, where, how long, by whom? _____

39. How many of your staffs trained in surveillance? _____

Resources

40. For data management

a) Computer & Printer Yes/No

b) Photocopier Yes/No

c) Data manager Yes/No

d) Statistical package Yes/No

41. Communications availability

a) Telephone service Yes/No

b) Fax Yes/No

c) Radio call Yes/No

d) Internet Yes/No

Surveillance

42. Is there a budget line for surveillance in at sub city? Yes/No

If yes, is it sufficient Yes/No

43. If No, what option did you use at sub city level? _____

How could surveillance be improved? _____

_____.

44. What opportunities are there for integration of surveillance activities and

functions (Core activities, training, supervision, guidelines, resources etc.)?

a._____

b._____

c. _____

Attributes and level of

a) Usefulness:

45. Total population under surveillance in the sub city_____

46. How many cases and deaths reported in the sub city last year?

Malaria cases _____Deaths _____

47. Does the surveillance system help?

a) To detect outbreaks of these selected priority diseases early? Yes / No

b) To estimate the magnitude of morbidity, mortality and factors related to these

diseases? Yes/ No

c) Permit assessment of the effect of prevention and control programs? Yes/ No

b) Simplicity:

48. Do you feel that additional data collected on a case are time consuming? Yes/No

49. How long it takes to fill the format? a, <5-minute b-10-15minuts c- >15 minutes

c) Flexibility:

50. Do you think that the current reporting formats used for other newly occurring health event (disease) without much difficulty? Yes / No

51. Do you think that any change in the existing procedure of case detection, reporting, and

formats will be difficult to implement? Yes/ No

If yes, how? _____

d) Data Quality:

52. Are the data collection formats for these priority diseases clear and easy to fill for all the data collector's/ reporting sites? Yes/ No

53. Are the reporting site / data collectors trained/ supervised regularly? Yes/No

If, (Obs): Review the last month's report of these disease

54. Average number of *unknown or blank responses* to variables in each of the reported forms

_____

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

e) Acceptability:

56. Do you think all the reporting agents accept and well engaged to the surveillance activities? Yes/No

If yes, how many are active participants (of the expected to)? _____

57. If no, what is the reason for their poor participation in the surveillance activity?

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

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

c) Reporting formats are difficult to understand

d) Report formats are time consuming

e) If Others: _____.

f) Representativeness:

58. What is the health service coverage of the Woreda/ sub city? _____%

59. Do you think, the populations under surveillance have good health seeking behavior for these diseases? Yes/ No

g) Timeliness:

60. What proportion of Woreda reports in acceptable time? ----------%

h) Stability

61. Was the new BPR restructuring affect the procedures and activities of the surveillance of these diseases? Yes/No

62. Was there lack of resources that interrupt the surveillance system? Yes/No

Woreda (Intermediate Level) Questionnaire

Woreda_____

Respondent_____

Date _____

Interviewer _____

General Information

1. Is there a national PHEM /IDSR malaria Guide Line or manual at this site? Yes/No

If yes, (Obs) national PHEM /IDSR Guide line/manual: _____

2. Does the Woreda have guidelines or SOP for specimen collection and handling? and

Yes / No

3. Have you lacked forms recommended for the country at any time during the last 6 months?

Yes/ No

4. Number of reports received in the last 3 months compared to expected number

Weekly: _____ /12 times the number of health facilities

5. Number of weekly reports submitted on time: ____/12 times the number of health facilities (On Monday)

6.How do you report Weekly or immediately to the next level?

a/ Mail b/Telephone c/ Fax d/Radio e/ Electronic f/ Other

7. How can reporting system be improved?

_____

_____.

8. Did your analysis IDSR data? Yes/No

a) If yes, is data describe by person for any case based, outbreaks or sentinel? Yes/No

If yes, (Obs) description of data by age and sex

i) Is description of data by place (locality, village, work site etc.)? Yes / No

If yes, Obs. description of data by Place

j) Is the description of data by time? Yes/ No

If yes, (Obs) observed description of data by time?

9. Is there a trend analysis for the following disease a) Malaria Yes/ No

If yes, Obs. line graph of cases by time

10. Do you have an action threshold for any of the country malaria diseases? Yes/ No

If yes, what is it? _____cases _____% increase _____rate

(Obs for diseases) _____

11. Did you have appropriate denominators? Yes/ No

If yes, Obs. demographic data at site (E.g. total population by village, <5 yrs., ---

12. Who is responsible for IDSR data analysis? _____ ___

13. How often do you analyze the IDSR data?

a. Daily b. Weekly c. Every 2 weeks

d. Monthly e. Quarterly f. As needed…….

Outbreak investigation

14. Is there malaria Outbreak or suspected in the Woreda in the past year 6 months? Yes/No

If yes, number investigated_____ (Observe reports and take copies if possible)

Epidemic preparedness

15. Dose the Woreda epidemic preparedness plan? Yes/No

If, yes, (Obs) a written plan of epidemic preparedness and response.

16. Has the Woreda had emergency stocks of drugs and supplies at all times in past 1 year? Yes/No

If yes, (Obs), Observed the stocks of drugs and supplies at time of assessment

17. Has the Woreda experienced shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)? Yes/ No

18. Is there a budget line or access of funds for epidemic response? Yes/ No

19. Does the Woreda have a rapid response team for epidemics? Yes/No

If yes, (Obs) Observed minutes (or report) of meetings of epidemic management

20. Did epidemic response team evaluated their preparedness and response activities during the past year? Yes/ No

If yes, (observe written report to confirm)

Responses

21. Has the Woreda implemented prevention and control measures based on local data for at malaria disease or syndrome? Yes/No

22. Present of epidemic that responded by woredas within 48 hours of notification of most recently reported outbreak? _____

Feedback

23. How many feedbacks written reports has the woreda produced in the last year? _____

(Obs) Observed the presence of a written report that is regularly produced to disseminate

Supervision

24. Did you supervise the health facilities in the last 6 months? Yes/No

If yes, how many times have you been supervised in the last 6 months? _____

(Obs supervision report)

25. If No, the most usual reasons for not making all required supervisory visits.

(Text)

Reason 1_____

Reason 2_____

Reason 3_____

Training

26. Have you trained PHEM/IDSR disease surveillance? Yes/No

If yes, specify when, where, how long, by whom? _____.

27. What percent of your staffs in the Woreda trained on PHEM/IDSR surveillance? ____%

Resources

28. Logistics Available

a) Bicycles Yes/No

b) Motor cycles Yes/No

c) Vehicles Yes/No

d) Stationery Yes/No

e) Computer & Printer Yes/No

29. Communication available

a) Telephone service Yes/No

b) Fax Yes/No

c) Radio Yes/No

d) Computers that have modems Yes/No

30. Information education and communication materials

a) Posters Yes/No

b) Megaphone Yes/No

c) TV Screen Yes/No

d) Projector (Movie) Yes/No

31. Availability of hygiene and sanitation materials

a) Spray pump Yes/No

b) Disinfectant Yes/No

Surveillance

33. Is there IDSR focal person in the Woreda epidemic management committee? Yes/ No

34. Are you satisfied with the current surveillance system? Yes /No

If no, why? _____.

Attributes

a) Usefulness

35. Total population of the Woreda under surveillance_____

36. How many cases and deaths reported in the Woreda from the following disease past 6 months?

Malaria cases _____Deaths _____

36. Does the surveillance system help?

a) To detect outbreaks of these selected malaria diseases early? Yes / No

b) To estimate the magnitude of morbidity, mortality and factors related to these diseases? Yes/ No

c) Permit assessment of the effect of prevention and control programs? Yes/ No

b) Simplicity:

37. Do you feel that data collections on a case report form are time consuming? Yes/No

38. If yes, how long it takes to fill the format? a, <5-minute b- 10-15minuts c- >15 minutes

c) Flexibility:

39. Do you think that the current reporting formats used for other newly occurring health event (disease) without much difficulty? Yes / No

40. Do you think that any change in the existing procedure of case detection, reporting, and formats will be difficult to implement? Yes/ No

If yes, how_____.

d) Data Quality:

41. Are the data collection formats for these priority diseases clear and easy to fill for all the data collector's/ reporting sites? Yes/ No

42. Are the reporting site / data collectors trained/ supervised regularly? Yes/No

If, (Obs): Review the last month's report of these diseases

43. Average number of *unknown or blank responses* to variables in each of the reported forms _____

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

e) Acceptability:

45. Do you think all the reporting agents accept and well engaged to the surveillance activities? Yes/No

If yes, how many are active participants (of the expected to)? _____

46. If no, what is the reason for their poor participation in the surveillance activity?

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

b) No feedback / or recognition given by the higher bodies.

c) Reporting formats are difficult to understand

d) Report formats are time consuming) If Others: _____.

f) Representativeness:

47. What is the health service coverage of the Woreda? _____%

48. Do you think, the populations under surveillance have good health seeking behavior for these priority diseases? Yes/ No

49. Who do you think is well represented by the surveillance data? Urban / rural

g) Timeliness:

50. What proportion of health facilities reports in acceptable time? ----------%

h) Stability:

51. Was there lack of resources that interrupt the surveillance system? Yes/No

If yes, how did you manage it? _____

52. What do you suggest to overcome such problems? _____

Health facility Questionnaire (Health center)

Identifiers

Woreda_____

Name of health facility_____

Type of health facility _____

Respondent_____

Date _____

Interviewer: _____

General Information

1. Is there PHEM/IDSR national Guide line or malaria manual at this site? Yes / No

If yes, (Obs); for the existence PHEM/IDSR national guide line or malaria manual

2. Is there a clinical register in health facilities? Yes/ No

If yes, (Obs) the existence of a clinical register

3. Is there the health facilities correctly register cases during the previous 30 days?

Yes/No

If yes, (Obs); the clinical register

Do you have a standard case definition for: (each priority disease)?

Malaria Yes/No

If yes, (Obs) the standard case definition for: (each priority disease)

4. Dose of health facilities use standardized case definitions for the country's malaria diseases. Yes/ No

If yes, (Obs); the respondent correctly diagnosing one of the country's priority diseases using a standard case definition (Interview about of these)

5. Dose the health facilities have the capacity to collect and test the specimens?

Blood Y N N/A

6. If yes, (Obs) the presence of materials required to collect

blood/serum Yes N

7. Have you lacked appropriate surveillance forms at any time during the last 6 months?

Yes, No N/A

If yes, what the reason? _____

8. Observed that the last monthly report agreed with the register for 4 diseases (1 for each Targeted group [eradication; elimination; epidemic prone; major public health importance]

(Obs) Malaria Yes, No N/A

9. Number of reports in the last 3 months compared to expected number

(Obs) Weekly: _____ /12 times the number of health post sites

10. On time (use national deadlines)

(Obs) Number of weekly reports submitted on time: -_____ /12 times the number of sites

11. How do you report?

a/Telephone b/ Fax c/ Mail d/ Radio e/ Electronic f/ Other

12. How can reporting be improved? Your suggestion

_____

_____

13. Describe data by person, place and time (outbreaks, sentinel) Yes, No, N/A

If yes, (Obs) data

14. Is there trend analysis Performed? Yes, No N/A

If yes, (Obs) line graph of cases by time

15. Do you have an action threshold for any of the priority diseases? Yes, No N/A

If yes, what is it (Ask for 2 priority diseases)?

Malaria cases ____ % increase

16. Who is responsible for data analysis? _____

17. How often do you analyze the collected data?

a) Daily b) Weekly c) Every 2 weeks d) Monthly e) Quarterly

f) As needed…….

18. Presence of demographic data at site (E.g. population <5 yr., population by village, total

Population) Yes/No

Epidemic preparedness

19. Is there standard case management protocol for epidemic prone diseases at health facilities? Yes, No N/A

If yes, (Obs) the existence of a written case management protocol for 1 epidemic prone disease

Epidemic response

20. Has the health facility implemented prevention and control measures based on local data for at least one epidemic prone disease? Yes, No N/A

Feedback

21. Have you received feedback report in the last year from higher level? Yes/No

If yes, how many feedback reports has the health facility received in the last year? ___

(Obs); at least 1 report received

22. Have you conduct meeting with community in the last 6 months? Yes, No N/A

If yes, how often? a) Weekly b) every two weeks c) monthly d) quarterly e) as needed

Supervision

23. Did you get any supportive supervision from higher level in the last 6 months? Yes, No N/A

If yes, (Obs); supervision report or any evidence for appropriate review of surveillance

Training

24. Have you trained in disease surveillance and epidemic management? Yes, No N/A

If yes, specify when, where, how long, by whom? _____

_____.

25. Number of Staffs trained in disease surveillance and epidemic management_____.

Resources

26. Logistics

a) Electricity Yes/No

b) Bicycles Yes/No

c) Motor cycles Yes/No

d) Vehicles Yes/No

27. For data management

a) Stationery Yes/No

b) Calculator Yes/No

c) Computer Yes/No

d) Software Yes/No

e) Printer Yes/No

28. Communications available

a) Telephone service Yes/No

b) Fax Yes/No

c) Radio call Yes/No

d) Computers Yes/No

29.Information education and communication materials

a) Posters Yes/No) TV Yes/No

d) Other: Yes/No

30. Hygiene and sanitation materials

a) Spray pump Yes/No

b) Disinfectant Yes/No

31. List Personal Protection materials (PPE) available in health facility

_____ _____ _____

_____.

Attributes

a) Usefulness

32. Total population of the Catchment under surveillance_____

33. How many cases and deaths reported in the Woreda from the following disease past 6 month?

a) Malaria cases _____Deaths _____

35. Does the surveillance system help?

d) To detect outbreaks of these selected priority diseases early? Yes / No

e) To estimate the magnitude of morbidity, mortality and factors related to these diseases? Yes/ No

f) Permit assessment of the effect of prevention and control programs? Yes/ No

b) Simplicity

36. Do you feel that data collections on a case report form are time consuming? Yes/No

37. If yes, how long it takes to fill the format? a, <5-minute b- 10-15minuts c- >15 minutes

c) Flexibility

38.Do you think that the current reporting formats used for other newly occurring heath

event (disease) without much difficulty? Yes / No55. Do you think that any change in the existing procedure of case detection, reporting, and formats will be difficult to implement?

Yes/ No

If yes, how_____.

d) Data Quality

39. Are the data collection formats for these priority diseases clear and easy to fill for all the

data collector's/ reporting sites? Yes/ No

40. Are the reporting site / data collectors trained/ supervised regularly? Yes/No

If, (Obs): Review the last months' report of these diseases

41. Average number of *unknown or blank responses* to variables in each of the reported forms

_____

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

total reports _____

e) Acceptability

43. Do you think all the reporting agents accept and well engaged to the surveillance activities?

Yes/No

If yes, how many are active participants (of the expected to)? _____

44. If no, what is the reason for their poor participation in the surveillance activity?

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

g) No feedback / or recognition given by the higher bodies.

h) Reporting formats are difficult to understand

i) Report formats are time consuming

j) If Others: _____.

f) Representativeness

45. What is the health service coverage of the Catchment? _____%

46. Do you think, the populations under surveillance have good health seeking behavior for these priority diseases? Yes/ No

g) Timeliness

47. What proportion of reports send in acceptable time? ----------%

h) Stability

48. Was there lack of resources that interrupt the surveillance system? Yes/No

If yes, how did you manage it? _____

49. What do you suggest to overcome such problems? _____.

Annex III: Data collection tool for health profile assessment in Woreda 01, Kolfe Keranyo sub city, A.A

Historical Aspects of the area

Woreda Name------

Any historical aspect about the woreda---------

2.Geography and climate (including map, altitude)

Woreda map----------

Location (distance and direction) ---------- ----------

Altitude----------

Latitude---------- Longitude----------

Annual rain falls (average)---------- Annual temperature(average)----------

Area of woreda----------sq. km

Woreda boundaries

North---------- South----------

East---------- West----------

3.Administrative set up

Total number of ketena? ----------

How many sectors in the woreda? ----------

Main transport and how to they connected each woreda-------

How many people access to fixed Telephone? ----------

How many people access to mobile phone? ----------

How many people get power supply? ----------

4.Demographic information

Population: Total----------

Male---------- Female---------- Sex ratio----------

Population distribution

Sir. No	Description	Total Population	%	Remark
1	Male			
2	Female			
3	Under 1 year			
4	Under 5 years			
5	5-15 year			
6	15 -49			
7	6-59-month age group			
8	24-59-month age group			
9	Pregnant women			
10	Non-pregnant on reproductive age			

Ethnic/ Language

Oromo----------(---%) Amhara----------(------%)

Tigre----------(----%) Gurage----------(----------%)

Others----------(----%)

Religion

Orthodox---------(--------%) Muslim-------(-----%)

Protestant----------(------%) Other----------(----%)

5. Economy (mainstay of the economy, average income level)

Main income sources

Employee---------- Different business---------- Daily laborers---------- Jobless----------

Average income----------

6. Education and school Health

Number of educational institution

Government

College/ TVET_____, High school_____, _____Elementary ___K.G.___

Private

College/ TVET_____, High school_____, _____Elementary ___K.G.___

School Enrolment	Sex			
	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Illiterate				
KG				
Elementary				
High school				
TVET				
Collage/University				
School Age Children (target)				
School dropout year 2008 EFY				

Water supply: schools with water supply_____

Toilets: schools with functional latrines (male and female) _____

Schools with HIV/other Health clubs_____

7. Infrastructure for health Facilities (Transport, Telecommunication, Power supply, water supply…)

How many of the health facilities access to?

Transportation_____ (%), Telecommunication_____ (%),

Electric power_____ (____%) Water supply _____ (%)

8. Safe water coverage

Keeble's getting safe water_____ (%)

Population getting safe water_____ (%)

Main source of water_____

9. Health delivery system

Health Facilities

Type	Number	Total No. of beds
Gov. Hospital		
Gov. Health center		
Private Hospital		
Clinics.		
Diag.Lab.		
Pharmacy		
NGO health center		
Hospital		
Clinic		

Health institution to population ratio:

Hospital: Pop_____ HC: Pop_____

HP: Pop_____ Health service coverage_____%

Human resource for health sector

Types of Health professional	No.	Remark
Specialist		
G.P		
HO		
Nurses (Deg. and Dip.)		
Mid wife (Deg. and Dip.)		
Lab. (Deg. and Dip.)		
Pharmacy (Deg. and Dip.)		
Env. Health (Deg. and Dip.)		
HIT		
Health education		
HEWs		
Others (Applied biology)		

Nurse: pop. ratio Mid. Wife: pop. Ratio _____HEW: pop. ratio_____

Top causes of morbidity and mortality

Top ten leading causes of OPD visit (morbidity):

Adult		# of cases	%	Pediatrics/ < 5 years	# of cases	%
1						
2						
3						
4						

5						
6						
7						
8						
9						
10						
Others						
Total						

Top ten causes of admissions

Adult		# of cases	%	Pediatrics/ < 5 years	# of cases	%
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Others						
Total						

Top ten causes of deaths (mortality).

	Adult	Pediatrics/ <5 years
1		
2		
3		

4		
5		
6		
7		
8		
9		
10		

10. Vital Statistics and Health Indicators

Infant Mortality Rate (IMR) _____ (total <1 yrs. deaths this 2008 yrs._____)

Child Mortality Rate_____ (this year's total <15 yrs. deaths_____)

Crude Birth Rate_____

Crude Death Rate_____ (total deaths 2008 yrs.____)

Maternal Mortality Rate_____ (2008 total maternal deaths_____)

Contraceptive Prevalence rate_____

Contraceptive acceptance rate _____

ANC rate (how many of the total expected pregnancies attended 1st ANC) _____

ANC rate (how many of the total expected pregnancies attended 4th ANC) _____

Percentage of deliveries attended by skilled birth attendants_____

Immunization Coverage (for children and Women);

BCG _____ (__%). OPV0____ (____%), OPV1_____ (___%), OPV3_____ (___%)

Measles_____ (___%). Penta1_____ (___%). penta2 _____ (___%) Penta 3_____ (___%)

PCV-10-1_____ (__%), PCV-10-3_____ (___%), TT2+P.W_____ (__%), TT2+ N.P.W_____ (___%)

11. Health budget allocation:

Government

Total budget allocated for the woreda _____

Total budget allocated for health _____ (____%)

Funds from NGO

Total _____ (purpose/programs) _____

12.Disaster situation in the woreda

Was there any disaster (natural or manmade) in the woreda in the last one year? _____

Any recent disease outbreak/other public health emergency_____

If yes, cases_____ and deaths_____

13. Community Health Services;

Status of services provided by community health workers namely

No. of TBAs/TTBA_____ and their responsibility _____

No. of CHWs/CHPs_____ and their responsibility _____

Responsibility of HEWs_____

Others_____

14. Status of Primary Health Care Components – with focus on the eight PHC elements and MDG

- (Immunization, MCH, Essential drugs, Food and Nutrition, Education, Illness and injury, Water and Sanitation, Vector and reservoir)

MCH (Delivery, ANC, PNC)

S.no	Indicator	Total Number
1	Number of ANC Cases Registered	
2	Number of pregnant women provided at least TT2	
3	PNC cases visited	
4	Number of children <5 year treated for diarrhea at public HF	
5	Number of children <5 year treated for pneumonia at public health facilities	
6	Number of facilities reporting stock out of contraceptive commodities	
7	Total deliveries conducted by skilled attendants	
8	Number of live births	
9	Number of still births	
10	Total obstetrics/Maternal/deaths	
11	Total Newborn deaths	

Family Planning Methods		
Methods	Frequency	Percentage
Oral Contraceptive		
IUD		
Implant		

Injection		
Condom		

Is their EPI (outreach service?) Yes, No

Was Conduct cold chain or vaccine management supportive supervision Yes, No

If yes, do you have checklist? Yes, No

15.Environmental Health and Sanitation

Latrine coverage_____ & utilization rate_____

Type of Latrine Type of Latrine	Frequency	Percentage
Open field		
Pit Latrine		
Ventilated Pit Latrine		
Others		

Solid waste management

Is their solid waste container? Yes, No

Is their solid waste container loader? Yes, No

If yes, frequency of solid waste collection_____

Is there Liquid waste management? yes, No

others_____

Health Education (what, when, where, how and who conducted health education) _____

16. Endemic diseases Malaria:

Total cases/yrs._____ deaths/yrs._____, <5yr cases_____ deaths_____

Malaria supplies (Coartem, RDT, etc.) shortage _____

Other issues_____

TB/Leprosy

Total TB cases_____ PTB negative_____ PTB positive_____ Extra PTB _____

TB detection rate _____

TB Rx completion rate _____ TB cure rate _____

TB Rx success rate _____

TB defaulter_____

Death on TB Rx_____

Total TB patients screened for HIV_____

Total Leprosy cases_____ on Rx_____

HIV/AIDS;

Total people screened for HIV (last one year) _____

VCT_____ PITC_____PMTCT_____

HIV prevalence_____

HIV Incidence (new cases/yrs.) _____

Total PLWHA_____

On ART_____ _____on Pre-ART_____

Other HIV prevention activities_____

17.Nutrition

Total Out Patent Therapeutic Program (OTP) sites_____, total admissions to OTP/yrs._____

 Total SC sites, _____, Newly opened/yrs._____, total admissions to SC/yrs._____

Is there TSF (targeted supplementary feeding) program in the woreda_____

 CBN program_____ PSNP_____ _____other_____

Essential drugs (shortage): -_____

what do you think the major Health problem/s of the woreda_____?

Discussion of the highlights and the main findings of the health profile assessment and description----------

Problem Identification and Priority Setting – set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc

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Annex IV: Questionnaire for rapid meher assessment of health sector at woreda level, 2017

Health Sector. Region/Zone Interviewer name_____		Institution: _____	
Interview Date: (dd) ____/(mm)_____/2017		Region: _____ Zone: _____	
Main contact at this location:	Name: _____	Position: _____	Tel: _____
COORDINATION			
Is there a functional multisector coordination forum for the health sector?	Yes□	No□	
Are all relevant government, NGOs and UN agencies represented?	Yes□	No□	
Frequency of regular meeting? (Weekly, Every 2 weeks, monthly….) _____			
Outbreak?			
Was there any outbreak in the last 3 months? If yes, specify the name of disease outbreak	Yes□	No□	
Disease outbreak _____# of cases: _____Deaths _____ (time period) _____			
Disease outbreak _____# of cases: _____Deaths _____ (time period) _____			

Mention anticipated epidemics_____, _____, _____ If yes please indicate Zone/Woreda at risk and risk population per anticipated risk: *(Use the back side)*		
Public Health emergency Management		
Is there a Public Health Emergency Preparedness and Response plan?	Yes□	No□
If yes, is the plan budgeted/ funded?	Yes□	No□
Is there a trained staff on PHEM (Regional/Zonal/Woreda/HFs)	Yes□	No□
If yes specify number of trained personnel per level: Region: Female----Male---- zone: Female----Male----- Woreda: Female—Male---		
Is there a Regional Trained Rapid Response team (RRT)?	Yes□	No□
Are there trained staff on Minimum Initial Service Package for RH	Yes□	No□
If yes specify number of trained personnel per level: Region: Female—Male----Zone: Female---Male---Woreda: Female----Male-----		

Drugs and medical supplies	Total requirement	Available	Gap
Meningitis vaccine			
Drugs:		Coartem	
Artesunate (rectal)			
Artesunate (Inj)			
Artemether IM			
Quinine (PO)			
Quinine (IV)			
Chloroquine			
Ceftriaxone			
Oily CAF			
Doxycycline			
Ringer lactate			
ORS			
Vit A.			
Lab supplies		RDT (Malaria)	
Pastorex (Meningitis)			
LP set			
TI bottle			
CTC Kit (AWD)			
Medical Supplies		Gloves,	

Syringe
PPE

'Meher' Assessment- Health Sector: Woreda level Questionnaire 2017

Serial No. Interviewer name _____		Interview Date: (dd) ____/(mm)_____/20137	
Region: _____		Zone: _____Woreda_____	
Main contact at this location:	Name: _____	Position: _____	Tel: _____
SECTION I: SOCIO- DEMOGRAPHIC PROFILE			
Woreda total population:	M: __ F: _____	Under 5_____	Total: ____
No. of women of reproductive age (age 15-49 yrs.): _____			
No. of pregnant women: _____			
No. of lactating women: _____			
Total no. of PLW: _____			

Special Population *(if any):*	Pastorals____	Refugees____	IDPs____	Migrant Workers___
SECTION II: HEALTH PROFILE				
2.1. Coordination				

Is there a functional multi sectoral PHEM coordination forum?	Yes□ No□
Is there a PHE preparedness and response plan?	Yes□ No□

Is there accessible emergency response fund	Yes□ No□
Is there fund allocated for Preparedness activities	Yes□ No□
2.2. Morbidity (List top 5 causes of Morbidity) in the year 2009 EC	
Morbidity below 5 years	Morbidity above 5 years
1.	1.
2.	2.
3.	3.
4.	4.
5.	5.

2.3. List number of cases/deaths from Sene 2009 to Tikimit 2010 (June–October 2017)

Month	AWD		Malaria		Measles		Meningitis		Other(specify)	
Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	
June 2017										
July 2017										
August 2017										
September 2017										
October 2017										

NB: Number of cases and deaths of the specific disease could be total case reported by the routine surveillance system during the period and not necessarily outbreak report

2.4. Outbreak?	
Was there any outbreak in the last 3 months? (August- October)	Yes□ No□

If yes, specify the disease: Disease outbreak _____# of cases: _____ ___Deaths _____ (time period DD/MM/YY) _____	
Disease outbreak _____# of cases: _____Deaths _____ (time period DD/MM/YY) _____	
Is there any ongoing outbreak of any disease?	Yes□ No□
Disease outbreak _____# of cases: _____Deaths _____ (Start date) _____	
Disease outbreak _____# of cases: _____Deaths _____ (Start date) _____	
Disease outbreak _____# of cases: _____Deaths _____ (Start date) _____	
2.5. Preparedness: Is there emergency drugs and supplies enough for 1 month? Or easily accessible on need? *(NB: Use the stock matrix to calculate this)*	
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□
Artesunate (rectal) for Malaria		Yes□ No□
Artesunate (Injection) for Malaria		Yes□ No□
Artemether IM for Malaria		Yes□ No□
Quinine (PO) for Malaria		Yes□ No□
Quinine (IV) for Malaria		Yes□ No□
Chloroquine for Malaria		Yes□ No□
Ceftriaxone (Meningitis)		Yes□ No□
Lab supply: RDT for Malaria		Yes□ No□
Lab supply: RDT (pastorex) for meningitis LP set		Yes□ No□ Yes□ No□
Number of CTC kit available: (for AWD)		Yes□ No□
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 <80%		Yes□ No□
Indicate the coverage of IRS 2010_____		

Depleted prevention and control activities	Yes□ No□	
Malaria Guideline (new)distributed to all Health facilities	Yes□ No□	
Health workers trained on the new Malaria guideline	Yes□ No□	
Number of malarias' kebeles and total population in these Kebeles	Keb _____ Pop(F)_____(M)_____	
Meningitis	Was there Meningitis epidemic in the last 3 years (If yes specify year) _____	
Has vaccination been conducted in the past 3 years	Yes□ No□	
If yes: Indicate the date and number of people vaccinated	Date____	No_____
Is there Meningitis outbreak control Guideline	Yes□ No□	
Are health workers trained on Meningitis outbreak management	Yes□ No□	
AWD	Was there AWD epidemic in the last three years (If yes specify date) _____	Yes□ No□
Latrine coverage		
Latrine utilization		
Safe water coverage		
Is Cholera outbreak control Guideline distributed to all HFs	Yes□ No□	

Is there ongoing measles outbreak	Yes□ No□
What is the measles vaccination coverage of 2009, less than one year (Hamle 2009-Sene 2010)	
Is Measles Guideline distributed to all Health facilities?	Yes□ No□
Are health workers trained on Measles	Yes□ No□
Has SIA been conducted in 2009 EFY	Yes□ No□
If yes, Indicate the month and number of children vaccinated including the age group	Month_____
No. Vaccinated_____	
Age group_____	

Annex V: Questionnaires for assess the prevalence of Measles case and determine the risk factors associated with development of Measles among children presenting to the health Facility of Kolfe keranyo sub city.

INFORMED CONSENT

Hello. My name is _____ we are conducting a survey about the Magnitude of measles and factors associated to measles in this sub city. The information we collect will help the government to plan the health services. The survey usually takes about 15 to 25 minutes. We do not write your name, all of the answers you give will be confidential and will not be shared with anyone. You have to right to disagree on the survey, but we hope you will agree to answer the questions since your views are important. If I ask you any question you don't want to answer, just let me know and I will go on to the next question or you can stop the interview at any time. Do you have any questions?

May I begin the interview now?

RESPONDENT AGREES TO BE INTERVIEWE_____

RESPONDENT DOES NOT AGREE TO BE INTERVIEWED_____

If agreed continue,

Signature of interviewer: _____ Date: _____

If not agreed, say thanks and go to the next clients.

I. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex	1. Male 2. Female
1.2	Age	years_____ Months_____

1.3	Occupation of the patients	1. Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't 8. Other (specify)_____
1.4	Family Occupation (HH head)	Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't 8. Other (specify)_____
1.5	Religion	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Other (specify)_____
1.6	Ethnic group	1. Oromo 2. Tigre 3. Amhara 4. Other (specify)

1.7	Educational level of the patient	1. Illiterate 2. Read and write 3. Elementary 4. Secondary 5. Above secondary 6.N/A
1.8	Educational level of the family	1. Illiterate 2. Read and write 3. Elementary 4. Secondary 5. Above secondary
1.9	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Separated, 6 N/A
1.10	Family size	_____

1.11	Is there any sick person with rash, fever, running nose/conductivities (illness)? In the family?	1. Yes 2. No
1.12	If yes, number of sick person	__---------- _____

II. Birth, weaning, nutritional and disease characteristic of measles case

2.1	Birth order	1.everyone years 2.every two years 3.every three years 4.every four years _____
2.2	Place of delivery	1.Home 2.Health facility
2.2	Mode of delivery	1.SVD/forceps delivery 2.C-section
2.3	Birth weight	1.less than normal birth weight 2.normal birth weight
2.4	Problem after birth	1.any illness 2.None
2.5	Breast feeding	1.Yes

		2.No
2.6	Weaning	1.4 month 2.6 month 3. 7 month and above_____
2.7	Child's current classification as per Modified Gomez classification	1.Low weight 2. Normal
2.9	*Bitot's spots	1. present 2. Absent

2.10	Did you have been vaccinated for measles?	1.Yes 2.No 3.Unknow 4.Not applicable
2.11	Other children vaccinated at home	1.Yes 2. No 3.Do not know
2.12	Similar illness in the last three weeks	1.Yes 2.No

2.13	Health facility visited in the last 3 weeks	1.Yes 2.No
2.14	Reason for visiting health facility	1.some illness 2.compilmentary visit

III. Risk factor

3.1	Did you have been vaccinated for measles?	1.Yes 2.No 3.Unknow 4.Not applicable
3.2	Number of vaccine doses received	1.one dose 2. two doses 3.three and above
3.3	Age of vaccination at first vaccinated.	__----------_____
3.4	If not vaccinated why?	1.lack of knowledge about vaccination campaign 2.absence during vaccination campaign 3.other (specify)
3.5	Did you have any travel history 7-18 days to areas with active measles cases before onset of symptoms?	1.Yes 2.No If Yes, where _____

3.6	Did you contact with a person with measles symptoms within the last 2-3 weeks?	1.Yes 2.No
3.7	Do you have any travel history four days before and after rash onset	1.Yes 2. No If yes where _____
3.8	Do you have any contact history with someone else four days before and after rash onset	1.yes 2.No
3.9	If Yes to question 3.5 place of travel	1.School 2.Neighbor 3.Market 4.Other_____
3.10	Do you know modes of transmission for measles?	1.Yes 2.No 3. If yes specify_____
3.11	Did you ever have measles infection?	1.Yes 2. No 3. Don't know
3.12	Nutritional status of the cases	1.Normal 2.Moderate 3.Severely malnourished

3.14	What is the estimated area of the house in M2?	_____
3.15	House condition?	ventilated not-ventilated
3.16	Distance from house to HC?	greater than 5 km equal or less than 5 km
3.17	Where did you go first when you get ill?	1. Health Facility 2. Traditional Healers 3.Holy water 4.Stayed at home 5.Other (specify)
3.18	How do you think people get measles?	1. Contact with a virus from ill person 2. From God 3. Bad attitude of other people 4. Other(Specify)
3.19	Do you Know measles is vaccine preventable?	1. Yes 2. No 3. I don't Know
3.20	Who do you think can be affected by measles?	

		1. Children of aged less than 5 years 2. Children of aged less than 18 years 3. Women of any ages 4. Any age groups of both male and women . Other(specify): _____
3.21	How do you think measles can be cured?	1. Using modern medicine 2. Using traditional Medicine 3. Holly water 4. By feeding nutritious foods 5. Keeping the sick person indoor 6. Other(Specify)_

Declaration

I, the undersigned, declare that this is my original work and has never been presented by another person in this or any other University and that all the source materials and References used for this thesis have been duly acknowledged.

Name: Siyene Yirgalem

Signature: _____

Place: Addis Ababa Health Bureau

Date of Submission: May 30/2018

The thesis has been submitted for examination with my approval as a university advisor.

Name of advisor:

Signature: _____

Date: