



Addis Ababa University College of Health Sciences School of Public Health

Ethiopian Field Epidemiology and Laboratory Training Program (EFELTP)

Compiled Body of Works in Field Epidemiology

By Meseret Mengesha Bilal

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

Advisors

- 1. Fikire Enquesslassie Gashe (BSc, MSc, PhD,)**
- 2. Jimawork Wondimu(BSc, Field epidemiologist,)**

May 2016
Addis Ababa

ADDIS ABABA UNIVERSITY

School of Graduate Studies

Compiled Body of Works in Field Epidemiology

By Meseret Mengesha Bila

Ethiopian Field Epidemiology and Laboratory Training Program (EFELTP)

School of Public Health, College of Health Sciences

Addis Ababa University

Approval by Examining Board

Chairman, School Graduate Committee

.....

Advisor

.....

Examiner

.....

Examiner

Acknowledgement

First and foremost, Praises and thanks to the God, the Almighty ,for His showers of blessings throughout my study time to complete the thesis successfully.

I would like to express my deep and sincere gratitude to my mentors Professor. Fikire Enquesslassie Gashe ,Department of Community Health Head, Department of Preventive Medicine, Addis Abeba university and Field epidemiologist .Jimawork Wondimu ,MSF, Surveillance manager, Addis Abeba , for their advice, guidance and constructive comments on my body of work.

I would like to expand my gratitude to the Ethiopian Field Epidemiology Training Program coordinators Dr. Lucy Boulanger, program director, Dr. Zegeye Hailemariam , Dr. Adamu Addisse Academic coordinator of the program and Dr. Alemayehu Bekele program coordinator from Ethiopian public health association, for their unreserved technical and administrative support, in achieving this output.

I wish to express my gratitude to my field supervisor Mr. Endashawu Shibru, Regional PHEM core process owner for his excellent facilitation and support on my field base stay and all regional PHEM officers who gave me all technical and other support.

I went to express my deepest appreciation to Mr. Tilahun Tafese Sidma Zone PHEM core process owner for his excellent facilitation , for his constructive review of this document and he supported me for the success of this work in all stages .

I would like to express my utmost gratitude to the organizations: Addis Ababa University, Federal Ministry of Health, CDC/Ethiopia, Ethiopian Public Health Association, SNNPR Health Bureau, for giving me this opportunity to study and all other sectors who gave me all support and for their cooperation during my all residency time.

I am extremely grateful to my husband, parents ,sisters and brothers for their love, prayers and continuing support to complete this thesis.

Finally, my thanks go to all the people who have supported me to complete the body of work directly or indirectly

Table of Contents	Pages
Acknowledgement	I
List of Tables	IV
List of Figures.....	V
List of Annexes.....	VIII
List of Abbreviations	IX
Executive Summary	XIII
Chapter I- Outbreak Investigation	1
1.1 Measles outbreak investigation in Hull District, Sidama Zone, SNNPR February 8, 2015	2
1.2 Measles outbreak investigation in Aroresa District, Sidama zone, SNNPR ,December 2015	18
Chapter 2- Surveillance Data Analysis Report	34
2.1 Malaria Data Analysis report from 2011 - 2015 in SNNPR , Ethiopia.....	35
Chapter 3- Evaluation of Surveillance system.....	54
3.1 Surveillance Evaluation of Acute Severe Malnutrition and Measles in Sidama zone SNNPR, Ethiopia, March ,2016.....	55
Chapter 4-Health Profile Description Report	79
4.1 Health Profile Description in Boricha District of Sidama zone, SNNPR, Ethopia.....	80
Chapter 5- Scientific Manuscripts for Peer Reviewed Journals	97
5.1 Malaria Surveillance Data Analysis Report from 2011 - 2015 in SNNPR , Ethiopia	98
.....	109
Chapter 6-Abstract For Scientific Presentation	109
6.1 Epidemiological a retrospective Analysis of Injuries following the Hawassa Earthquake, Hawassa ,Sidama Zone, SNNPR, January 2016.....	110
6.2 Measles outbreak investigation in Hull District, Sidama Zone, SNNPR February 8, 2015	112
Chapter 7-Narrative Summary of Disaster Situation visited	113
7.1 Epidemiological a retrospective Analysis of Injuries following the Hawassa Earthquake, Hawassa ,Sidama Zone, SNNPR, January 2016.....	114
7.2 Belg Health and Nutrition Assessment report of Gurage and Silte Zone July 2015.....	125

7.3 Rapid Nutrition Assessment In Southern, Nations and Nationality people Region (SNNPR) on Gedio Zone 13/12/2007- 5/13/2007.....	136
Chapter 8 – Protocol/Proposal for Epidemiologic Research Project	154
8.1 Assessment of the Utilization and Associated Factors of Insecticide-Treated Net (ITNs) in Boricha District ,Sidama Zone, SNNPR, Ethopia.....	155
Chapter 9 -Other Additional Output Reports.....	168
9.1 Road traffic injury Proposal submitted for Pre-TEPHINET GLOBAL Conference NCD Training Workshop.....	169
9.2 Weekly PHEM Bulletin SNNPR 2015	171
Annexes	175

List of Tables	Pages
Table1.1.1 Mothers’ educational status in Hulla district, Sidama zone, 2015.....	12
Table1.1.2 Fathers’ educational status in Hulla district, Sidama zone, 2015.....	13
Table1.1. 3: Factors associated with measles in Hulla district, Sidama zone, 2015.....	14
Table 1.2.1 No of cases (n=50) and their control (n=100) paired with socio demographic status, Aroresa district ,SNNPR,Ethiopia2016.....	29&30
Table 3.1.1 List of reportable diseases / conditions in Ethiopia.....	64
Table 3.1.2 Seven diseases and conditions to be reported weekly to the next reporting level.....	65
Table 3.1.3 : Number of health facilities in Sidama zone ,SNNPR, Ethiopia ,2016	66
Table 3.1. 4 Measles Indicators, Sidama zone SNNPR, 2010-2015.....	70
Table 4.1.2 No of enrolled student and their teachers by sex in Boriccha district.....	86
Table 4.1.3 Health facilities infrastructures, Boricha District, Sidama Zone, SNNPR, 2014.....	87
Table4.1. 4 List of health facilities with their respective catchment health posts.....	88
Table 4.1.4 Population and Vital statistics in Boricha District, Sidama Zone, SNNPR, 2014.....	89
Table 4.1.5 Total number and types of Boricha district water source.....	90
Table 4.1.6 Top five cause of under five outpatients visit in Boricha Districti, Sidama zone 2014.....	91
Table 4.1.7 Top ten cause of adult outpatient department visit in Boricha Districti, Sidama zone 2014.....	91
Table 8.1.1 .Budget breakdown for prposed survey in Boricha distict ,sIdama zone ,SNNPR ,2016.....	156
Table9.2.1 The number of sites that expected and reported on time; epidemiological week 28/2015, SNNPR	171

List of Figures	Pages
Figure 1.1.1 Measles cases by kebele, Hulla district, Sidama Zone, SNNPR.....	8
Figure 1.1.2 Measles attack rate per 1000 by Age category, Hulla district, Sidama Zone, SNNPR.....	9
Figure1. 1.3 Spot Map of Measles Outbreak Hulla District, Sidama Zone, SNNPR.....	9
Figure 1.1.4 Measles cases by vaccination status , Hulla district, Sidama Zone, SNNPR	10
Figure 1.1.5 Epi-Curve showing the distribution of measles cases by time in Hulla District, 2014.....	11
Figure 1.1.6 Epi-Curve showing the distribution of measles cases by time in Hulla District, 2015.....	11
Figure 1.2.1 Spot map of measles cases by kebele, in Aroresa district, Sidama Zone, SNNPR 2015-2016.....	25
Figure 1.2.2 Number of measles case notified by kebele and attack rate (24/12/2015-5/1/2016).....	26
Figure 1.2.3 Number of measles cases by vaccination status in Aroresa district ,Sidama,Zone ,SNNPR 24/12/2015-5/1/2016.....	26
Figure 1.2.4 Number of measles case by age category in Aroresa district, Sidama Zone,SNNPR 24/12/2015-5/1/2016.....	27
Figure1.2. 5 Number of measles case by date of onset in Aroresa district, Sidama Zone, SNNPR 24/12/2015-5/1/2016.....	27
Fig 2.1.1 Distribution of Malaria cases by Zone and Special district,SNNPR,Ethopia,2011-2015.....	42
Figure 2.1.2 -Annual malaria case at Zonal and special district level in SNNPR,Ethopia,2011-2015.....	43
Figure 2.1.3 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2011	44
Figure 2.1.4 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2012.....	44
Figure 2.1.5 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2013.....	45

Figure 2.1.6 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2014....	45
Figure 2.1.7 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2015....	46
Figure 2.1.8 Confirmed and case fatality rate by zone and special district in SNNPR 2011	47
Figure 2.1.9 Confirmed and case fatality rate by zone and special district in SNNPR 2012	47
Figure 2.1.10 Confirmed and case fatality rate by zone and special district in SNNPR 2013.....	48
Figure 2.1.11 Confirmed and case fatality rate by zone and special district in SNNPR 2014.....	48
Figure 2.1.12 Confirmed and case fatality rate by zone and special district in SNNPR 2015.....	49
Figure 2.1.13 Annual malaria case at Zonal and special district level in SNNPR,Ethopia,2011-2015...50	
Figure 3.1.1 Diagram illustrating the formal and informal flow of surveillance data and information through the health system.....	58
Figure 3.1.2- Map of Sidama Zone Administration, SNNPR, Ethiopia	60
Figure 3.1.3 Weekly OTP Trends from 2014-2015 in Sidama Zone, SNNPR ,Ethiopia.....	68
Figure 3.1.4 Weekly SC Trends from 2014-2015 in Sidama Zone, SNNPR ,Ethiopia.....	69
Figure 3.1.5 Timeliness and Completeness of all district and HF of Sidama Zone, 2015.....	75
Figure 4.1.1 Map of Boricha district ,Sidama Zone, SNNPR, 2014.....	84
Figure 4.1.6 Vaccination coverage of children in Boricha District, Sidama Zone, SNNPR, 2014.....	90
Fig 5.1.1 Distribution of Malaria cases by Zone and Special district,SNNPR,Ethopia,2011-2015.....	103
Figure 5.1.2-Annual malaria case at Zonal and special district level in SNNPR,Ethopia,2011-2015....	104
Figure 5.1.3 - Annual malaria case at Zonal and special district level in SNNPR,Ethopia,2011-201....	105
Figure 7.1.7- Map of Hawassa City Administration , Sidam zone, SNNPR, Ethiopia	118
Figure 7.2.1 shows prevalence trend of malaria monthly in Gurage, Zone, SNNPR 2015.....	127
Figure 7.2.2 monthly OTP cases in Gurage ,zone ,SNNPR 2015.....	128
Figure 7.2.3 Monthly SC cases in Gurage ,zone ,SNNPR 2015.....	128

Figure 7.2.4 TFP Admission Trend Compared to the previous two years in Gurage Zone, SNNPR 2013-2015.....	129
Figure 7.2.5 TFP Admission Trend Compared to the last years in Mareko district, Gurage Zone, SNNPR 2014-2015.....	130
Figure 7.2.6 TFP Admission Trend Compared to the last years in Meskan district, Gurage Zone, SNNPR 2014-2015.....	131
Figure 7.2.7 shows prevalence trend of malaria monthly in Silte, Zone, SNNPR 2015.....	133
Figure 7.2.8 TFP Admission Trend Compared to the previous two years in Silte Zone, SNNPR 2013-2015.....	134
Figure 7.2.9 TFP Admission Trend Compared to the previous two years in Sankura district, Silte Zone, SNNPR 2014-2015.....	135
Figure 7.3.1:Trends of OTP and SC cases in SNNPR ,Gedio Zone from 2003-2007.....	137
Figure 7.3.2:Trends of OTP and SC cases in SNNPR ,Gedio Zone in 2007.....	138
Figure 7.3.3:Trends of SAM cases and Death in SNNPR, Gedio Zone in 2007.....	138
Figure 7.3.4:Trends of Malaria cases in SNNPR ,Gedio Zone from 2003-2007.....	139
Figure 7.3.5 :Trends of SC cases in SNNPR ,Gedio Zone from April to August in 2006 and 2007	139
Figure 7.3.6 :Trends of OTP cases in SNNPR ,Gedio Zone from April to August in 2006 and 2007.....	140
Figure 8.1.8- Map of Boricha district, Sidam zone, SNNPR, Ethiopia	163
Figure 9.2.1 Showing Report Completeness of zones and Special district of SNNPR, Week 28/2015.....	172
Figure 9.2.2: Depicting burden of confirmed Malaria cases in Zones and Special districts of SNNPR, Week 28/ 2015.....	172

List of Annexes	Pages
Annex 1 :Questionnaires for Case control study on Measles outbreak in Hulla District.....	175
Annex:2 Questionnaires for Case - control study on Measles outbreak in Aroresa Woreda, Sidama Zone, and SNNP Region.....	186
Annex 3 :Proposal of surveillance system evaluation in Sidama Zone ,SNNPR ,2016.....	198
Annex 4 Health Profile Description of Boricha District, Sidama zone of SNNPR, Ethiopia 2014.....	247
Annex 5 : Questionnaires for Descriptive study on Earthquake Related Injuries in Hawassa town , Sidama Zone, and SNNP Region.....	272
Annex 6: Interview using unstructured questionnaire about the cold chain management, EPI coverage, reporting system and EPI data quality of the Hulla and Aroresa district	277
Annex 7:Pictures of Hulla district measles cases.....	283
Annex :8 crack on wall of building and collapsed fence by Hawassa Earthquake.....	286

List of Abbreviations

AAU : Addis Ababa University

AAU-SPH : Addis Ababa University School of Public Health

ACT : Artemisinin Based Combination Therapy

AFI : Acute Febrile Illness

AIDS: Acquire Immuno -Deficiency Syndrome

ANC : Antenatal Care

ART: Anti-Retroviral Therapy

BCG : Bacillus-Calmette-Guerin

BPR: Business Process Re-engineering

CBN:-Community Based Nutrition

CDC : Center for Disease Control and Prevention

CHA: - Community Health Agent

CHD:- Community Health Days

CHP: - Community Health Promoter

CRS: Congenital Rubella Syndrome

CSA: Central Statistics Agency

DPT:- Diphtheria, Pertussis & Tetanus

E.C: Ethiopian Calendar

EFETP : Ethiopian Field Epidemiology Training Program

EPHI : Ethiopian Public Health Institute

FMoH : Federal Ministry of Health

EPHA : Ethiopia Public Health Association

EPI : Expanded Program on Immunization

TFP:- Therapeutic Feeding program

GC: Gregorian calendar

HC : Health Center

HDA:- Health Development Army

HEP : Health Extension Program

HIV: - Human Immunodeficiency Virus

Hib : Haemophilus Influenza Type b

HMIS: Health Management Information System

HPs: Health Posts

HR : Human Resource

HSDP : Health Sector Development Program

IDSR: Integrated Disease Surveillance and Response

IG: Immunoglobulin

IgG: Immunoglobulin G

IgM: Immunoglobulin M

IMR: Infant Mortality Rate

IPD: Inpatient Department

IPTp :Intermittent Preventive Treatment in Pregnancy

IRS:-Indoor Residual Spraying

ITN: Insecticide Treated Nets

LLINs: Long-Lasting Insecticidal Nets

MCH: Maternal and Child Health

MDG: Millennium Development Goal

M&E : Monitoring & Evaluation

MIS: Malaria Indicator Survey

NSP :National Strategic Plan

OPD: Outpatient Department

OPV: Oral Polio Vaccine

OTP:- Outpatient Therapeutic Program

PCR: Polymerase Chain Reaction

PCV: Pneumococcal Conjugated Vaccine

PICT:-Provider Initiated Counseling and Testing

PHEM: Public Health Emergency Management

POP: Plaster of Paris

PSNP:-Productive Safety Net Program

RNA: Ribonucleic Acid

RT: Reverse Transcription

SAM : Sever Acute Malnutrition

SC : Stabilization Center

SIA: Supplementary Immunization Activity

SNNPR: Southern Nations ,Nationality and Peoples Region

SPH : School of Public Health

SSA: Sub- Saharan Africa

STI : Sexually transmitted infections

TB : Tuberculosis

TSFP : Targeted Supplementary Feed Program

TT : Tetanus Toxoid

TTBA : Trained Traditional Birth Attendant

UNICEF : United Nations Children's Fund

URTI : Upper Respiratory Tract Infections

VCT : Voluntary Counseling and Testing

VPI : Vaccine-Preventable Diseases and Immunization Program

WASH : Water, Sanitation and Hygiene

WFP : World Food Program

WHO: World Health Organization

Executive Summary

The Ethiopian Field Epidemiology training program started in 2009. Field Epidemiology and Laboratory Training Program is an in-service training program in field epidemiology adapted from United States Center for Disease Control and Prevention (CDC) Epidemic Intelligence Service (EIS) program. It is a two years field base masters program. The School of Public Health/Addis Ababa University, the Federal Ministry of Health of Ethiopia /Ethiopian Public Health Institute(EPHI),and the Ethiopian Public Health Association(EPHA)/CDC Ethiopia are running the program together. During the field placement component I was engaged on outbreak investigation, surveillance data analysis, surveillance system evaluation, district health profile development, participating in disaster situation analysis, project proposal development, abstract writing for scientific conference, giving training for zone and district level PHEM officers. This compiled body of works has nine main chapters which all of them were done during the residency time of the program.

Outbreak investigation I-1: Measles outbreak occurred in Hulla district, despite vaccination coverage of the district 99% in 2013, 105% in 2014 and 96% six month coverage of 2015. Investigation was conducted and majority of the cases, 184 (60%), were between 5-14 years of children. The attack rate was 452 per 100,000 populations with zero case fatality rate. The vaccination statuses from the whole cases were, 44 (14%) were unknown case, 14(5%) were two dose, 53(17%) one dose and 196(64%) zero dose. Contact history with sick and travel history two weeks prior to the onset of symptoms were significantly associated with Odds ratio of 126(15.8, 1002), 16(3.5, 73) respectively.

Outbreak investigation I-2: Frequent measles outbreaks in the Aroresa district with measles vaccination coverage of more than 95% for the last three years. An attack rate and case fatality rate for the 293 measles suspected cases were 372.7 and 2.53 per 100,000 populations respectively. Travel history two weeks prior to the onset of symptoms came out to be important factors to increase the number of measles cases in the study area 2-3 week with odds ratio of 5.4(2.3, 12.7). Number of rooms for living below four per a house hold also have a significant association with the measles disease with odds ratio of 4.57(1.0, 20.7). Number of family size less than or equal to five per a one house hold have a protective effect with measles case with odds ratio of 0.45(0.21 , 0.97). Being educated of mother and father is protective from measles infection with odds ratio of 0.26(0.08, 0.79) and 0.23(0.11, 0.47), respectively. Being vaccinated is protective with odds ratio of 0.15(0.06, 0.38) .

Surveillance Data Analysis Report II: A 5 years (2011-2015) malaria confirmed secondary data of SNNPR region were collected and analyzed. The prevalence of malaria confirmed cases was increasing

since 2011 up to 2012. High malaria confirmed cases were reported in 2012 and that account 11656 per 10000 malaria confirmed cases. However, starting from mid 2012, the prevalence was decreasing tremendously until 2015 and it reduced by 4 times compared to the 2012 data. Between 2011 and 2015, case fatality rate of the SNNPR have decreased. High case fatality rate 0.06% reported in 2011 in Gamgofa zone and Segen people zone , in 2012 high case fatality rate reported from South Omo zone and Basketo special district 0.128 % and 0.119% respectively.

Evaluation of surveillance system III: Hulla district is one of the district on priority three emergency nutrition together with frequent measles outbreaks, we carried out surveillance evaluation. Except the zonal level major problems was observed in district, health center and health post levels on different surveillance system. Such as limited data analysis or null was identified, both health centers and health posts did not know health posts to Federal level expected weekly surveillance data report schedule and timely report from health post to health center was very weak.

Health profile description report IV: Boricha district is one of the districts of Sidama Zone in SNNPR. The total population of a district in 2014 was estimated to be 314309. From the total population 157689 male and 156620 female. Among the total population, 94.3% (296,478) reside in rural areas and 5.7% (17,920) reside in urban kebeles.

The leading cause of adult outpatient visit in the district was AFI which accounts 18% of the total causes of visits. Trauma and intestinal parasites were also other leading causes of adult outpatient visits next to AFI. Pneumonia was the leading cause of under-five outpatient visit in the district. Even though, an increased coverage of ITN in the district, malaria was remaining to be the community problem.

Scientific manuscript journal V: A peer review journal was prepared on a disease entitled Spatial distribution of Malaria from 2011 - 2015 in SNNPR , Ethiopia.

Abstracts for scientific Presentation VI: Two abstracts were prepared and one submitted for scientific conference .The abstract were prepared on an event/disease entitled Epidemiological a retrospective Analysis of injuries following the Hawassa Earthquake, Hawassa ,Sidama Zone, SNNPR, in January 2016 and Measles outbreak investigation in older children in Hull District, Sidama Zone, SNNPR February 8, 2015.

Disaster situation visited VII: I conducted Epidemiological a retrospective Analysis of injuries following the Hawassa Earthquake, Hawassa ,Sidama Zone, SNNPR, in January 2016. Additionally I was participated in Belg Assessment (Seasonal Health and Nutrition Assessment) in Gurage and Silte

Zone from 23 June to 7 July 2015. and Rapid Nutrition Assessment In Southern, Nations and Nationality people Region (SNNPR) on Gedio Zone 13/12/2007- 5/13/2007

Proposal development for epidemiologic research VIII: An epidemiologic research project proposal was done on title; Assessment of the Utilization and Associated Factors of Insecticide-Treated Net (ITNs) In Boricha District ,Sidama Zone, SNNPR, Ethiopia.

Other additional outputs IX: Under additional outputs part a research project proposal on Road traffic injury submitted for Pre-TEPHINET GLOBAL Conference NCD Training Workshop. Other activities like weekly SNNPR bulletin, provision of training on acute watery diarrhea(AWD) in different zone and districts

Chapter I- Outbreak Investigation

1.1 Measles outbreak investigation in Hull District, Sidama Zone, SNNPR February 8, 2015

Abstract

Introduction: Measles outbreak is still a public health problem in different Ethiopian regions. Hulla district reported a measles out-break in February, 2015 to South Region Nation and Nationality health office , despite vaccination coverage of the district 99% in 2013,105% in 2014 and 96% six month coverage of 2015. Therefore, I conducted the investigation to assess the magnitude and determine contributing factors for the occurrence of measles outbreak.

Method: Descriptive epidemiologic study and A 1:1 unmatched case control with total of 50 cases and 50 control study was conducted. For the descriptive, a total of 307 cases were participated based on the measles line listing records. . Discussed, interviewed and reviewed with key informants about the cold chain management, EPI coverage, reporting system and EPI data quality of the Hulla district.

Results: Majority of the cases, 184 (60%), were between 5-14years of children. The attack rate became 452 per 100,000 populations with zero case fatality rate. The vaccination statuses from the whole cases were, 44 (14%) were unknown case, 14(5%) were two dose, 53(17%) one dose and 196(64%) zero dose. Contact history with sick and travel history two weeks prior to the onset of symptoms were significantly associated with Odds ratio of 126(15.8, 1002), and 16(3.5, 73) respectively.

Conclusion: In order to reach the age group of 5-14 years, providing a second opportunity for measles vaccination through supplementary immunization seems important. Additionally, early notification and response, improving routine vaccination, strength surveillance system in all levels could be an ideal approach to reduce measles outbreak and its complication.

Key word: Measles outbreak investigation in Hulla District

Introduction

Measles is an acute viral contagious illness with the potential for severe and life threatening complications, caused by a virus of the paramyxovirus family. Measles remains the leading cause of childhood morbidity and mortality amongst young children globally despite the availability of an effective vaccine. Fifty to sixty percent of 1.6 million global deaths attributed to vaccine preventable diseases are attributed to measles (1, 2). In 2011, an estimated 158,000 people died from measles worldwide, approximately 430 deaths every day. In some developing countries, case-fatality rates for measles among young children can reach 5–6% (3). In Africa 450 000 cases were reported and in Sub Saharan Africa 250 000 deaths were reported in 2009 (2).

The measles disease can be prevented by a safe and effective vaccine and globally, measles control activities have been very successful in reducing measles incidence and mortality. Since measles virus infects only humans, elimination is possible (5). However, it is one of the first diseases to reappear when vaccination coverage rates fall. Since 2001, African's countries have adopted different measles control strategies in order to reduce measles deaths. The strategies include improving routine vaccination coverage, providing a second opportunity for measles vaccination through supplementary immunization activities (SIAs), improving measles-case management, and establishing case-based measles surveillance (4).

In 2001, they planned accelerated measles control activities to reduce measles deaths by half by 2005 compared to the estimated number of measles deaths in 1999, and the implementation of the recommended strategies led to a 75% reduction in estimated measles mortality in the African Region by 2005. Following this progress, in 2006 the African Region adopted a goal to achieve 90% measles mortality reduction by 2010 compared with the estimate for 2000. In that implementation, by 2008 in the African Region, reported measles cases decreased 93% and estimated measles mortality decreased 92% compared with 2000 (4).

Recently in 2012, all regions of the World Health Organization (WHO) except the South-East Asia Region have set an elimination goal to be achieved by 2020 or sooner (5). In coordination with other WHO African region countries, Ethiopia has set a goal of measles elimination to be achieved by 2020. However, The National Immunization Program was established in the 1980s. The elimination strategy includes a first dose of measles vaccine at age 9 months through routine immunization services and a second dose given through measles campaigns conducted every few years delivers service through static and outreach sites nationwide.

Two-dose coverage of 95% is needed for measles elimination; however Ethiopian's national routine measles vaccination is still first-dose vaccination at 9 months of age. The coverage of first dose vaccination doubled from 33% in 2000 to 66% in 2012 (6). After the implementation of Elimination goal, there was an increase in the measles immunization coverage (86.5%) in 2014 from 2013 performance (83.2%), which was above the target set for the year (84.0%). Regional distribution showed that SNNPR was the best performing region (97.3%) 86 target(7). However, measles outbreak is still a public health problem in different Ethiopian regions. The Ethiopia Ministry of Health has been investigated measles outbreak every time immediately after the occurrence, irrespective of place and time. The Sidama zone reported 15 measles cases within one week and 5 measles cases sample to regional PHEM and Regional Laboratory, despite vaccination coverage 99% in 2013,105% in 2014 and 96% six month coverage of 2015. After receiving this report from Sidama zone ,we deployed to Sidama zone and discussed with PHEM staffs finally the team deployed with Sidama zone PHEM staff to Hulla district .This investigation describes measles outbreak in Hulla District, Sidama Zone, in the southern region.

Objectives

General Objective

To assess the magnitude and contributing factors for the occurrence of measles outbreak.

Specific Objectives

To describe measles cases by person, time and place

To identifying high-risk population in the district

To determine factors associated with contracting measles

Methods

Study area and period:

An outbreak investigation was conducted in Hulla District, Sidama Zone, SNNPR from 11/2/2015 to 21/2/2015. The Hulla district health service delivery carried out by one district hospital, five health center and thirty one health posts. EPI service is one of the primary health care service which is provided in Hulla district. The EPI coverage in study area was reported high in 2014, for instance measles vaccination coverage of the district was 93%.

Study design and Participant

Descriptive epidemiologic study and A 1:1 unmatched case control study was conducted in Hulla district with total of 50 cases and 50 control. For the descriptive, a total of 307 measles cases were reported in the line listing records. Discussed, interviewed and reviewed with key informants about the cold chain management, EPI coverage, reporting system and EPI data quality of the Hulla district.

Study population

The study population was composed of the inhabitants of the Hulla district Kebeles involved in the measles outbreaks

Sampling procedure

Cases were selected randomly from the selected kebele's; and controls were the neighbors of the cases.

Diagnostic Methods for measles

Usually diagnosis is done using blood serum to confirm the presence of IgM; thus in this outbreak blood samples taken from the 1st five cases and all the specimens confirmed IgM positive.

Data collection and procedures:

Epidemiologic data were obtained by review of secondary data (Registry books, case based reports, line list records, surveillance data and related documents), were done in zonal health department, district health office; health center and health posts using WHO case definitions. In addition to this Interview using unstructured questionnaire were done with the key informant about the cold chain management, EPI coverage, reporting system and EPI data quality of the Hulla district. Eleven health workers with different health background participated (1 zonal

PHEM coordinator, 1 Head of district health office from Hulla, 1 district PHEM coordinator, 2 health centers' heads, 2 health centers' focal persons, 4 HEWs) in the interview.

Regarding the case control study, demographic information, clinical and treatment history, and vaccination status, contact history and knowledge and attitude towards measles vaccination were collected from the cases and controls. For the cases and controls who were adults (above 18 years and who could respond appropriately), information collected directly from them using structured questionnaire. For children under 18 years, their parents or care givers or guardian were interviewed. A total of 8 data collectors with health background were recruited to collect the data. They were trained before the data collection for half a day, in addition to that unclear issues and questions were discussed.

Inclusion and Exclusion criteria

A case was any resident of Hulla district who developed any of the following symptoms; fever *and* macula papular rash (i.e. non-vesicular rash) *and* cough *or* coryza (runny nose) *or* conjunctivitis (red eyes) between 17 January 2015 and 18 February2015, and who agreed to participate in the study was included. A control was any resident of Hulla district during the study who was a neighbor to a case and who did not develop signs and symptoms of measles and agreed to participate was included. Regarding the exclusion criteria, controls those who refused to participate were excluded as well as family members from the same house hold.

Data processing and analysis tools:

The data was entered in to Excel 2007, ArcGIS and Epi info 7 statistical soft ware. Attack rate, Epi-curve, coverage by age and kebele were calculated by using Excel 2007. Frequencies and associated factors were calculated using Epi-info 7 statistical soft ware.

Operational definition

Case: An individual with signs and symptoms of measles in Hulla district who were diagnosed by a clinician as a measles case using standard case definition or confirmed through serum examination from 17th January 2015 to 18th February 2015.

Control: An individual to the same district and or living in the study area but has no clinical signs and symptoms of measles during the study period. He/ She can be the neighbourhood or family of the cases.

A standard case definition and community case definition

A standard case definition of suspected and confirmed cases of measles was used as tool for detecting measles cases. These definitions must be used at all levels including the community, health professionals working at health posts, health centers, hospitals, health offices at different levels, private health facilities, other government health facilities and NGO clinics.

Standard case definition of measles to be used at health centers and above:

Suspected: 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: A suspected case with laboratory confirmation (positive IgM antibody) or epidemiologically linked to confirmed cases in an outbreak.

High risk group: Unvaccinated under 15 years children and Susceptible groups in the community.

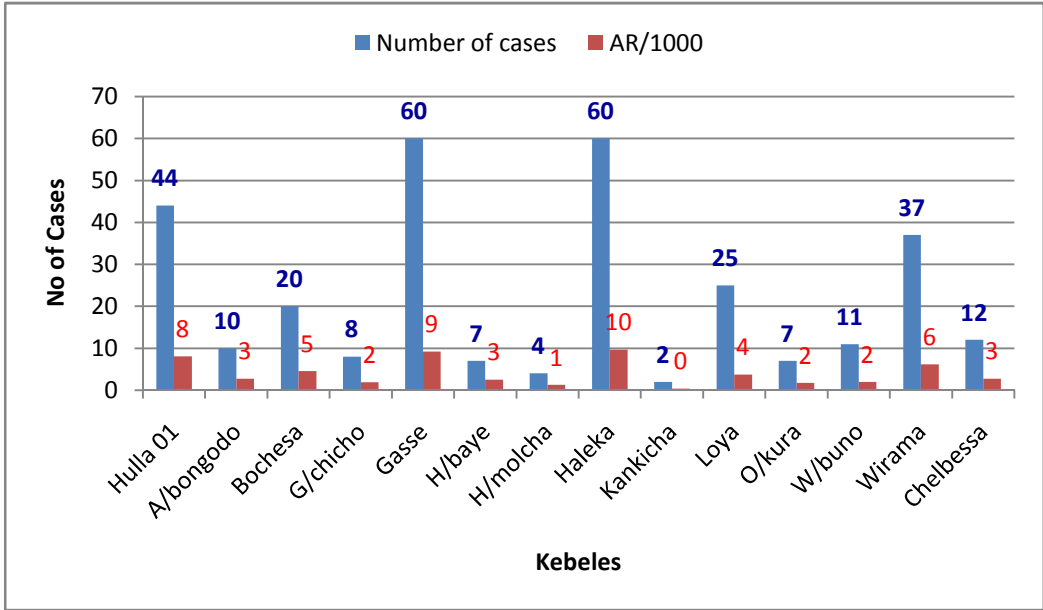
Epidemiologically linked case: A suspected measles case that has not had a specimen taken for serologic confirmation and is linked (in place, person and time) to a laboratory confirmed case; i.e., living in the same or in an adjacent district with a laboratory confirmed case where there is a likelihood of transmission; onset of rash of the two cases being within 30 days of each other.

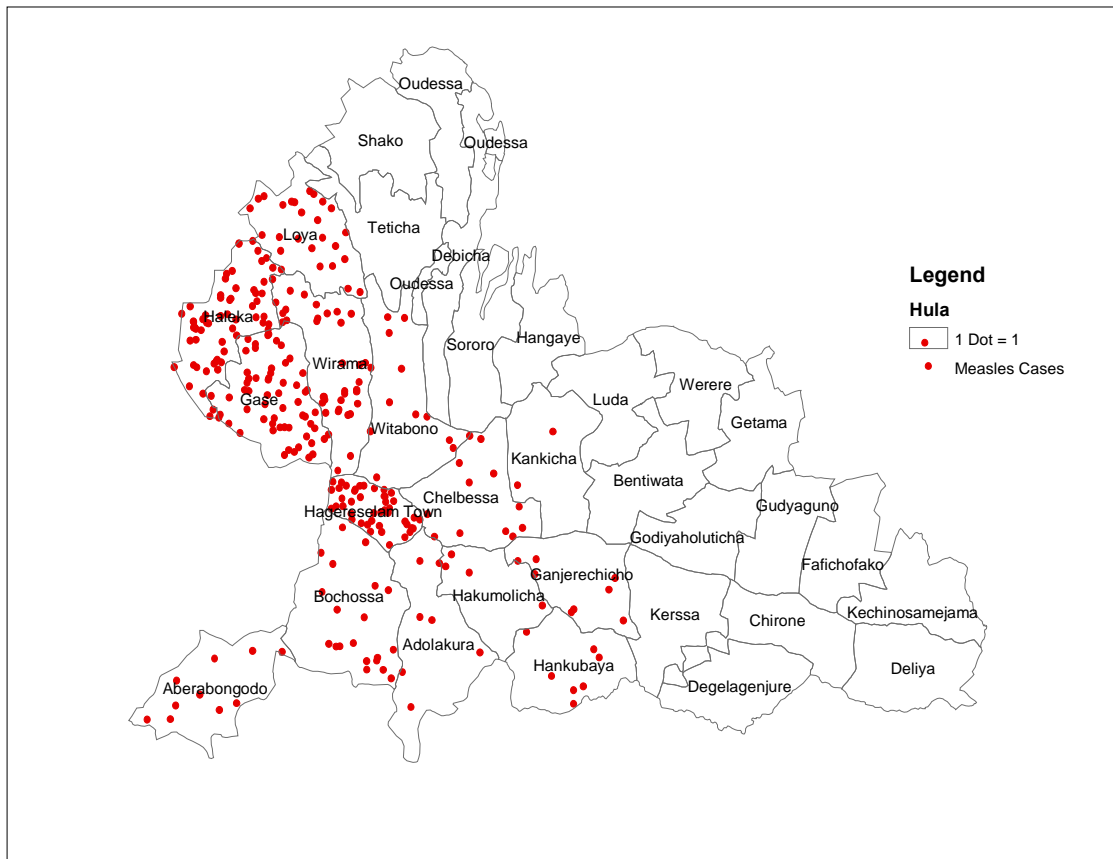
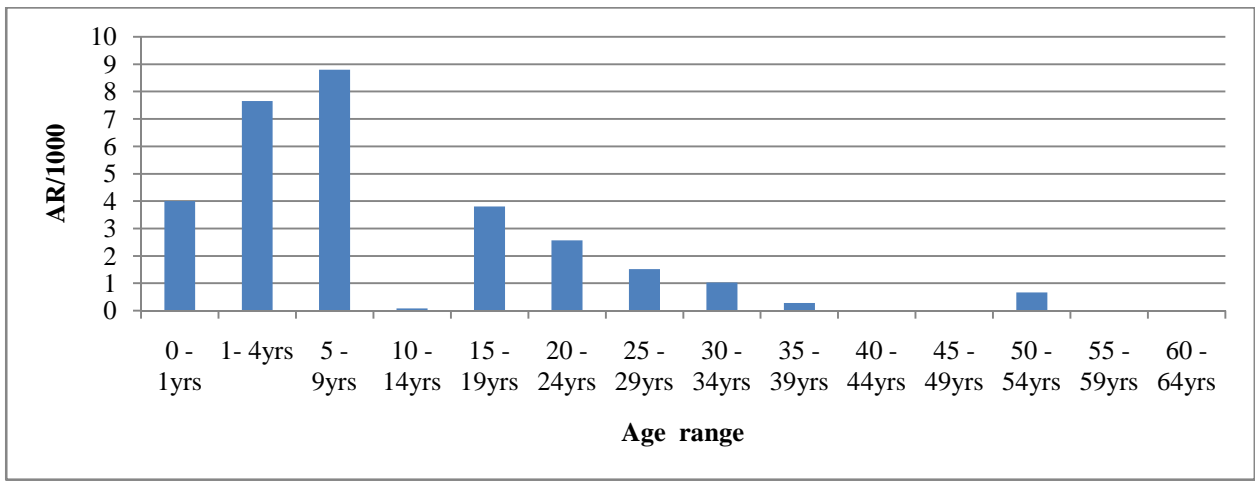
Case Definition (Rashes): Any person with fever and vesicular, maculapapular or pustular rashes on any part of the body.

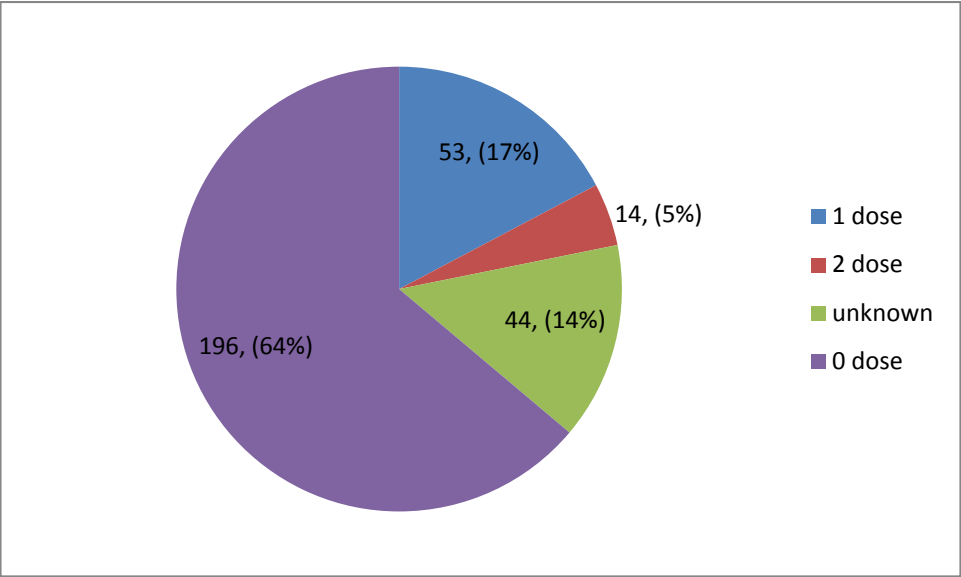
Epidemic Threshold: Occurrence of five or more reported suspected measles cases or 3 measles IgM positive cases in one month in a defined geographic area such as a kebele, district or health facility catchment area.

Data dissemination: The findings were communicated to the RHB/PHEM and ZHD/PHEM core process

Treatment was provided to measles Cases: Cases were treated using the national measles outbreak management guideline.







There were multiple peaks on the Epi curve in 2014 and 2015. The index case had onset of symptoms on the 8th of February 2014. In 2014, high peaks were observed on week 46 since the onset of measles outbreak that more than 25 cases were identified. Similarly in 2015 high peaks was registered on week 4 that more than 30 cases were identified (see Figure 1.1. 5 and 1.1.6).

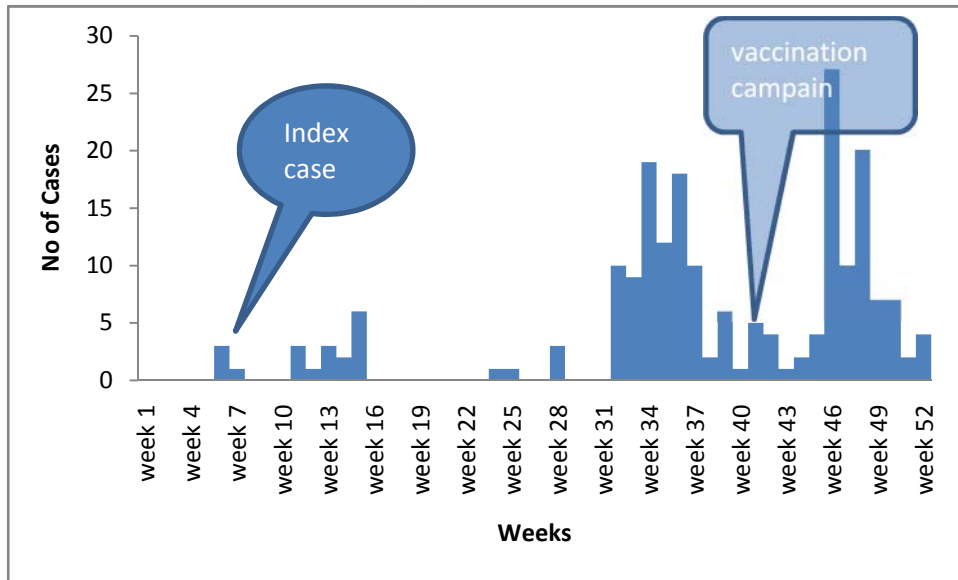


Figure 1.1.5 Epi-Curve showing the distribution of measles cases by time in Hulla District, 2014

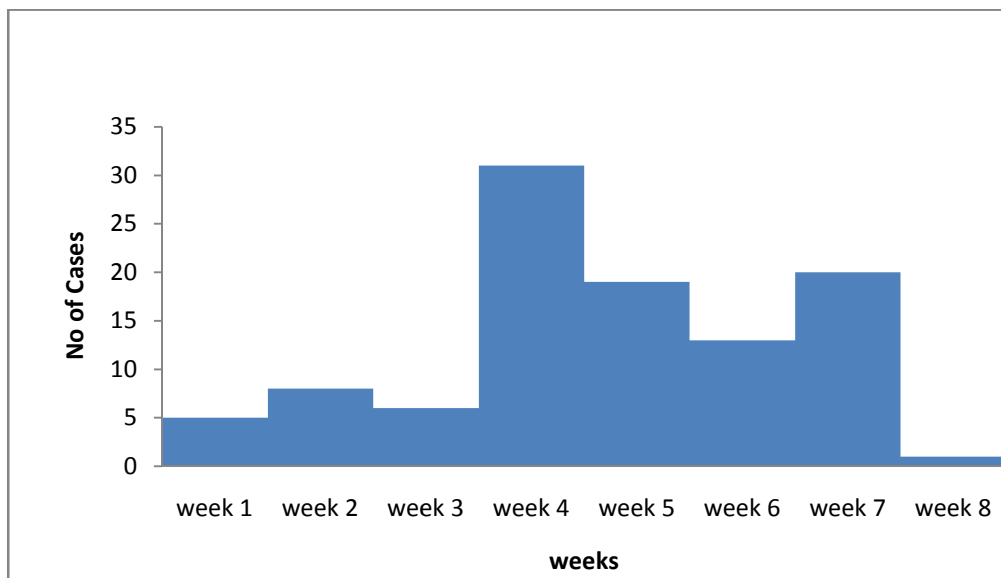


Figure 1.1.6 Epi-Curve showing the distribution of measles cases by time in Hulla District, 2015.

Interventions

Different interventions were taken place, such as each measles case were treated with antibiotics, TTC eye ointment, and additional advices were given about their diet. Additionally, health educations were provided to the community about transmission of measles, signs and symptoms of measles, and isolation of measles suspected cases. Contact tracing was carried out by health officers, clinical nurses and HEWs to the outbreak catchment area. Those interventions measures were taken at the District health offices, health centers and health posts levels only, for about six months after the onset of the outbreak, without reporting to the Zone. Therefore, mass vaccination started almost eight months after the outbreak onset. The district health office and health centers conducted nonselective vaccination campaign that aims to increase population immunity by focusing upon quickly increasing measles immunization coverage for all children aged 6 months to less than 5 years regardless of their vaccination status. The first round SIAs conducted on selected 8 kebeles which were more affected than the others. In addition to this when we go from District to health center there were big variation in number of measles cases reported, we got very high numbers of measles cases in health center than district health office and health posts.

Descriptive and associated results of the case control

Of the total 50 measles cases, 24 (48%) were Female and 26 (52%) were Males. The mean age of cases and controls were 6.6 and 6.5 year respectively. Out of the total 50 controls, 27 (54%) were males and 23 (46%) were females. Majority of the participants 82% were protestant and the rest were Orthodox and Muslim. Educational status of the mother and father were presented on table 1.1.1 and 1.1.2

Table 1.1.1 Mothers' educational status in Hulla district, Sidama zone, 2015

Mother education	Frequency	Percent
Above secondary	12	12.00%
Elementary	15	15.00%
Illiterate	41	41.00%
Read and write	21	21.00%
Secondary	11	11.00%
TOTAL	100	100.00%

Table 1.1.2 Fathers' educational status in Hulla district, Sidama zone, 2015

Father education	Frequency	Percent
Above secondary	29	29.00%
Elementary	15	15.00%
Illiterate	18	18.00%
Read and write	23	23.00%
Secondary	15	15.00%
TOTAL	100	100.00%

Different measles signs and symptoms were observed such as all cases developed rash, most of the cases 47(94%) had fever, almost three fourth of the cases 35(70%) developed conjunctivitis (red eye), 30(60%) of the cases had runny nose, 25(50%) of cases had cough and 7(14%) cases had diarrhea. More than half of the cases 28(56%) developed complications such as cough, diarrhea and ear discharge. From the total cases, 26(52%) visited the nearest health facilities to get a treatment and 22(44%) home visited by HEW and got a treatment. The rest 2 cases (4%) were neither visited the health facility nor treated. However, no cases visited and treated with traditional healer.

More than half cases reported that they had contact history at school compound or in their villages. Out of the total 37 participants who had a contact history with sick, 36(97.3%) were cases and Only 1(2.7%) was control. Regarding the vaccination status, of the total vaccinated subjects, 86, who took measles antigen vaccine, more than three fourth, 40(47%) of the subjects were cases and 46(53%) were controls. Only one fourth 26 (26%) of the study subjects' vaccination status checked by observing immunization card/certificate but the rest 86 (86%) were checked by verbal, without confirming the immunization card/certificate. Twenty two participants had reported travel history 2 weeks prior to the onset of symptoms, out of the 22, 20(91%) were cases, and the rest 2(9%) were controls .

Regarding to the knowledge toward the timing of measles first dose vaccination, more than half of the participants 58(58%) knew the right time for first dose measles vaccinations, which is 9 month age. Out of those participant 19 (33%) were cases, and the rest 39(77%) were controls. Majority of the participants 79(79%) had a positive attitude toward taking measles vaccination, prevents measles. Out of those participants who had a positive attitude of measles vaccination, 34(43%) were case and the rest 45(57%) were controls.

Further analysis was carried out to identify factors associated with measles. Contact history with sick and travel history two weeks prior to the onset of symptoms were significantly associated with Odds ratio of 126(15.8, 1002), and 16(3.5, 73) respectively. Attitude towards measles vaccine prevention and knowledge of first dose measles vaccination schedules were came out to be protective from measles with odds ratio of 0.24 (0.079, 0.71) and 0.17(0.07,0.42) respectively. However, vaccination status of the participants and education status of mother were not significantly associated with measles.

Table1.1. 3: Factors associated with measles in Hulla district, Sidama zone, 2015

Exposure	Yes/No	Case	Control	OR	Confidence interval	P value
Contact with sick	yes	36	1	126	(15.8,1002)	0.000
	no	14	49			
vaccination	yes	40	46	0.35	(0.1,1.2)	0.149
	no	10	4			
Illiterate Mother	yes	22	19	1.28	(0.58,2.8)	0.684
	no	28	31			
History of travel	yes	20	2	16	(3.5, 73)	0.00004
	no	30	48			
Attitude toward measles Vaccine prevention	yes	34	45	0.24	(0.079,0.71)	0.014
	no	16	5			
Knowledge of first dose Meseals vaccination schedule	yes	19	39	0.17	(0.07,0.42)	0.001
	no	31	11			

Discussion

There was confirmed measles outbreak in Hulla district. More than three hundred measles suspected cases were found in study area. The attack rate became 452 per 100,000 populations with zero case fatality rate. Factors contributing to this outbreak are presence of large number of unvaccinated children and unknown vaccine status. Also contact with measles case were found to be significantly associated with the occurrence of measles outbreak and these contacts were high in schools. Considering the 2012 measles elimination goal of WHO, the attack rate of the study area seems high and the outbreak lasted more than a year (8th of February 2014 to February 19th 2015). This might be due to high number of unvaccinated people and accumulation of susceptible groups in the study area. In addition to that there were delay of notifying occurrence of the outbreak and delay on response towards the outbreak in each health levels, for instance the district office reported to Zonal health department about the occurrence of the outbreak after six month of the incidence and then the zonal health department started taking actions after two months that they got informed. Because of this, appropriate measures delayed for example, early detection and referral for treatment, and mass vaccination carried out after eight month of the outbreak. Due to delay measures more than half of the cases developed complications. Besides the delay of taking an action, the mass vaccination campaign was only for under-5 years of children, and majority of age group, 5-15 years, were unvaccinated and they remained susceptible in the catchment area. Compared to the national (0.5%) and African case fatality rate of measles (5-6%), the case fatality rate which was reported in the study site incomparable, which was null. (7).

In Ethiopia the expected case fatality rate is between 3% and 6%(8). Even though, there was a delay on reporting and major actions by high level (zonal health department), District health office (Halt center and Health post) treated the cases with the resource they had at hand. Therefore, the null case fatality showed that the cases were treated appropriately and timely. The finding showed that 5-9 years age of children accounts 35% of the total measles cases. In line to this finding, a similar study in Zimbabwe showed that 5-14 year age groups were the most affected age group accounting 53.4% of the cases. This might be due to the mass vaccination, which was carried after eight months of the outbreak onset, was only given to children 6 months to 5 years. Therefore, children from 5 to 15 years did not get the vaccine and they were

susceptible (Measles outbreak investigation in Zaka, Masvingo Province, Zimbabwe, 2010). Based on the OR result, contact history with sick and travel history two weeks prior to the onset of symptoms came out to be important factors to increase the number of measles cases in the study area. Attitude towards measles vaccine prevention and knowledge of first dose measles vaccination schedules were found to be protective from measles. This shows that improving the knowledge and attitude of the population towards measles vaccination could be an ideal approach in order to reach the elimination goal by 2020.

Conclusion and Recommendation

High number of cases were unvaccinated, so that the district office should strengthen and should strongly follow routine immunization coverage. High contact history were reported in schools and it seems school education could be an ideal approach in order to reduce measles transmission. Measles' complications were reported among half of the cases. Therefore, major emphasis should be given for early notification, detection and referral for treatment. Majority of cases were in the age group of 5-14 years, MOH should provide a second opportunity for measles vaccination through supplementary immunization activities (SIAs) have to include under 15. Regular refresher courses training has to be organized on EPI and surveillance to improve health staff's knowledge of the surveillance system and cold chain management should be strengthened. The district annual report coverage shows high coverage, but in reality the number of unvaccinated measles cases were high in number so the district should work to improve the quality and reliability of EPI data reporting.

Limitation

The limitation of this study were shortage of transportation, beside that the houses were dispersed and sloppiness of district topography forced me to have a limited sample size. Additionally our data collection was very challenging. Weak linkage between health center and health post, poor documentation, HEW not using standardized line list formats, the cases found on the health center not known by health posts HEW and also the line list format did not include last name of the case and the villages (got). Therefore, we faced challenges to trace the cases registered on the health center.

References

1.1.1 World Health organization: *Measles mortality reduction and regional elimination. Strategic plan 2001–2005*. Geneva: World Health organization; 2001. [Pub Med Abstract](#) .

1.1.2 /Measles outbreak investigation in Zaka, Masvingo Province, Zimbabwe, 2010/

1.1.3 Wolf son LJ, Grais RF, Liquor FJ, et al. Estimates of measles case fatality ratios: a comprehensive review of community-based studies. *International Journal of Epidemiology*, 2009, 38:192–205.

1.1.4 Ethiopian Health And Nutrition Research Institute Federal Democratic Republic Of Ethiopia *January 2012*

1.1.5 Analysis of National Meseals surveillance data in Italy from October 2010 to December 2011 and priorities for reaching the 2015 meseals elimination goal

1.1.6 Evaluation of economic costs of a meseals outbreak and outbreak response activities in Keffa Zone , Ethiopia

1.1.7 Health Sector Development Program IV Annual Performance Report EFY 2006 (2013/14).

1.1.8 Federal Ministry of Health and WHO Ethiopia. National Guideline for measles surveillance and outbreak investigation, 3rd edition. January, 2012

1.2 Measles outbreak investigation in Aroresa District, Sidama zone, SNNPR ,December 2015

Abstract

Measles is one of the most infectious human diseases and can cause serious illness, lifelong complications and death. These infections were estimated to cause more than two million deaths and between 15 000 and 60 000 cases of blindness annually worldwide(1). Achieving MDG4 and global measles-mortality reduction goals will require a further increase in measles vaccine coverage(7). Occurrence of frequent measles outbreaks in the district with measles vaccination coverage of more than 95% for the last three years, we conducted the investigation to determine factors associated with contracting measles.

Method: Descriptive epidemiologic study and A 1:2 unmatched case control study was conducted in Aroresa district with total of 50 cases and 100 control. For the descriptive, a total of 295 cases were participated based on the measles line listing records. Discussed, interviewed and reviewed with key informants about the cold chain management, EPI coverage, reporting system and EPI data quality of the Aroresa district.

Result

An attack rate and case fatality rate for the 295 measles suspected cases were 372.7 per 100,000 populations and 0.67 % respectively. Travel history two weeks prior to the onset of symptoms came out to be important factors to increase the number of measles cases in the study area 2-3 week with odds ratio of 5.4(2.3,12.7). Number of rooms for living below four per a house hold also have a significant association with the measles disease with odds ratio of 4.57(1.0,20.7). Number of family size less than or equal to five per a one house hold have a protective effect with measles case with odds ratio of 0.45(0.21 ,0.97).Being educated of mother and father is protective from measles infection with odds ratio of 0.26(0.08,0.79) and 0.23(0.11,0.47), respectively .Being vaccinated is protective with odds ratio of 0.15(0.06,0.38)

Conclusion: Despite the last three years administrative measles vaccination coverage was very high the outbreak occurred in the district ,the study showed that occurrence of the outbreak due to accumulation of a large number of susceptible children and adolescent in the district

exacerbated by overcrowding house conditions, travel history and very challenging topography of the district .

Key word: Measles outbreak investigation in Aroresa District

Introduction

Measles is one of the most infectious human diseases and can cause serious illness, lifelong complications and death. Prior to the availability of measles vaccine, measles infected over 90% of children before they reached 15 years of age. These infections were estimated to cause more than two million deaths and between 15 000 and 60 000 cases of blindness annually worldwide(1). Malnutrition, poverty, overcrowding, poor hygiene, vitamin A deficiency, improper immunization and decreased immunity are the factors associated with an increased risk of the disease(2) In 2010, the World Health Assembly committed to reduce measles deaths by 95% of the 2000 levels by 2015. By 2010, estimated global measles mortality decreased 74% from 535 300 deaths in 2000 to 139 300 in 2010. Measles mortality was reduced by more than three-quarters in all WHO regions except the WHO southeast Asia Region. India accounted for 47% of estimated measles mortality in 2010, and the WHO African region accounted for 36%(3).Measles infection is still prevalent in many developing countries especially in parts of Africa and Asia where more than 20 million measles cases are reported annually (4). In some developing countries, case-fatality rates for measles among young children may still reach 5–6%(5). Improving measles vaccination coverage and reducing measles-related deaths is a global imperative, particularly as it relates to the United Nation’s Millennium Development Goal 4 (MDG4), which aims to reduce the overall number of deaths among children by two-thirds between 1990 and 2015(6) It is unacceptable that every day 380 children still die from measles and 300 children still enter the world with the disabilities of CRS despite the availability of effective, safe and inexpensive vaccines. Achieving MDG4 and global measles-mortality reduction goals will require a further increase in measles vaccine coverage(7).

In Ethiopia, a seasonal pattern of occurrence of measles has been observed over the years, with increased number of measles cases from December to February (Figure 4). Due to the low sub national routine measles coverage and prevailing poor living conditions, measles outbreaks continue to occur frequently in different parts of the country, most especially in Oromia and

SNNPR Regions . Between January and the end of July 2010, a total of 3,249 cases were reported, surpassing the 2009 levels. This was expected considering the immunity profile of the population, with suboptimal routine and SIAs coverage levels failing to protect the majority of young children. In the past few years, it has been observed that more and more of the measles cases are occurring in children and persons above 5 years of age. The high proportion of unvaccinated cases and transmission among older age groups explains the frequent measles outbreaks in Ethiopia despite attempts of systematic implementation of strategies (8).

Measles vaccination coverage of SNNPR and Sidama zone in 2007 was 97.4% and 97% respectively. Regarding to the distinct, frequent measles outbreaks occurrence was reported in the district . Despite measles vaccination coverage of study area more than 95% for the last three years, investigation was conducted to determine factors associated with contracting measles.

Rationale of the study

On December 21 ,2015 the regional health bureau received a report of laboratory confirmed outbreak of measles case from Aroresa district. The regional PHEM department deployed me with other Field epidemiology resident . We formed team from Sidama zone health department PHEM staff and went to Aroresa district to search additional cases, identify possible risk factors and plan for future outbreak prevention.

Objectives

General Objective

To assess the magnitude and contributing factors for the occurrence of measles outbreak.

Specific Objectives

To describe measles cases by person, time and place

To identifying high-risk population in the district

To determine factors associated with contracting measles

Methods

Study area and period:

An outbreak investigation was conducted in Aroresa District, Sidama Zone, SNNPR from Dec 25, 2015-Jan 4,2016.

Study design and Participant

Descriptive epidemiologic study and A 1:2 unmatched case control study was conducted in Aroresa district with total of 50 cases and 100 control. For the descriptive, a total of 295 cases were participated based on the measles line listing records. Discussed, interviewed and reviewed with key informants about the cold chain management, EPI coverage, reporting system and EPI data quality of the Aroresa district.

Study population

The study population was composed of the inhabitants of the Aroresa district Kebeles involved in the measles outbreaks

Sampling procedure

Cases were selected randomly from the selected kebele's; and controls were the neighbors of the cases.

Diagnostic Methods for measles

Usually diagnosis is done using blood serum to confirm the presence of IgM; thus in this outbreak blood samples taken from the 1st five cases.

Data collection and procedures:

Epidemiologic data were obtained by review of secondary data (Registry books, case based reports, line list records, surveillance data and related documents), were done in zonal health department, district health office; health center and health posts using WHO case definitions. Additionally Interview using unstructured questionnaire were done for supplementary information. Eleven health workers with different health background participated (1 zonal PHEM coordinator, 1 Head of district health office from Aroresa, 1 district PHEM coordinator, 1 disease prevention coordinatot,1 logistic officer, 2 health centers' heads, 2 health centers' IDSR focal persons, 4 HEWs) in the interview.

Regarding the case control study, demographic information, clinical and treatment history, and vaccination status, contact history and knowledge and attitude towards measles vaccination were collected from the cases and controls. For the cases and controls who were adults (above 18 years and who could respond appropriately), information collected directly from them using structured questionnaire. For children under 18 years, their parents or care givers or guardian were interviewed. A total of 14 data collectors with health background were recruited to collect the data. They were trained before the data collection for half a day, in addition to that unclear issues and questions were discussed.

Inclusion and Exclusion criteria

A case was any resident of Aroresa district who developed any of the following symptoms; fever *and* macula papular rash (i.e. non-vesicular rash) *and* cough *or* coryza (runny nose) *or* conjunctivitis (red eyes) between(25/3/4 -25/4/08) (Dec 5,2015 and January,4 2016) , and who agreed to participate in the study was included. A control was any resident of Aroresa district during the study who was a neighbor to a case and who did not develop signs and symptoms of measles and agreed to participate was included. Regarding the exclusion criteria, cases those who refused to participate and a case from the same house. In the case of controls, those who refused to participate were excluded as well as family members from the same house hold.

Ethical Considerations

The investigation was implemented in collaboration with the Regional health Bureau after obtaining authorization. Verbal informed consent was obtained from each of the respondents interviewed after detailed explanation about the existence of the outbreak and investigation objective.

Data processing and analysis tools:

The data was entered in to Excel 2007 ,ArcGIS and Epi info 7 statistical soft ware. Attack rate, Epi-curve, coverage by age and kebele were calculated by using Excel 2007. Frequencies and associated factors were calculated using Epi-info 7 statistical soft ware.

Operational definition

Case: An individual with signs and symptoms of measles in Aroresa district who were diagnosed by a clinician as a measles case using standard case definition or confirmed through serum examination from 25/3/4 -25/4/08) (Dec 5,2015 and January,4 2016).

Control: An individual to the same district and or living in the study area but has no clinical signs and symptoms of measles during the study period. He/ She can be the neighbourhood or family of the cases.

A standard case definition and community case definition

A standard case definition of suspected and confirmed cases of measles was used as tool for detecting measles cases. These definitions must be used at all levels including the community, health professionals working at health posts, health centers, hospitals, health offices at different levels, private health facilities, other government health facilities and NGO clinics.

Standard case definition of measles to be used at health centers and above:

Suspected: 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: A suspected case with laboratory confirmation (positive IgM antibody) or epidemiologically linked to confirmed cases in an outbreak.

High risk group: Unvaccinated under 15 years children and Susceptible groups in the community.

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.

Case Definition (Rashes): Any person with fever and vesicular, maculapapular or pustular rashes on any part of the body.

Epidemic Threshold: Occurrence of five or more reported suspected measles cases or 3 measles IgM positive cases in one month in a defined geographic area such as a kebele, district or health facility catchment area.

Data dissemination: The findings were communicated to the RHB/PHEM , ZHD/PHEM core process and District health office.

Result

Descriptive results of measles

The outbreak occurred in October 31,2015,and a total of 295 measles suspected cases were found from the district measles' line lists report 289 outpatient ,6 inpatient and 2 death was reported from the whole catchment, during October 31,2015 -January 4,2016(20/2/08 - 25/4/2008EC).The ages of cases ranged from 4months to 26 years. Out of the total cases, 155(52.5%) cases were female and 140(47.5%) male. Over all attack rate and case fatality rate for the 295 measles suspected cases were 372.7 per 100,000 populations and 0.68% respectively. Specimens were collected from five cases and all specimens collected and tested. Four of five specimens confirmed IgM positive. From the total cases, 17(5.8%) were under one children, 116(39%) were children 1-4 years , 147 (50.2%) were children 5-14years and 15(5%) were above 15 years children. Out of the total children 5-14 years age children had significantly high rates of illness . The major complications reported were pneumonia, and diarrhea. The most affected kebeles were Babare ,Welle hangala and Arabe and the least was Girja 01 and also The high attack rate also seen on Babare, Welle hangala and Arabe kebele.

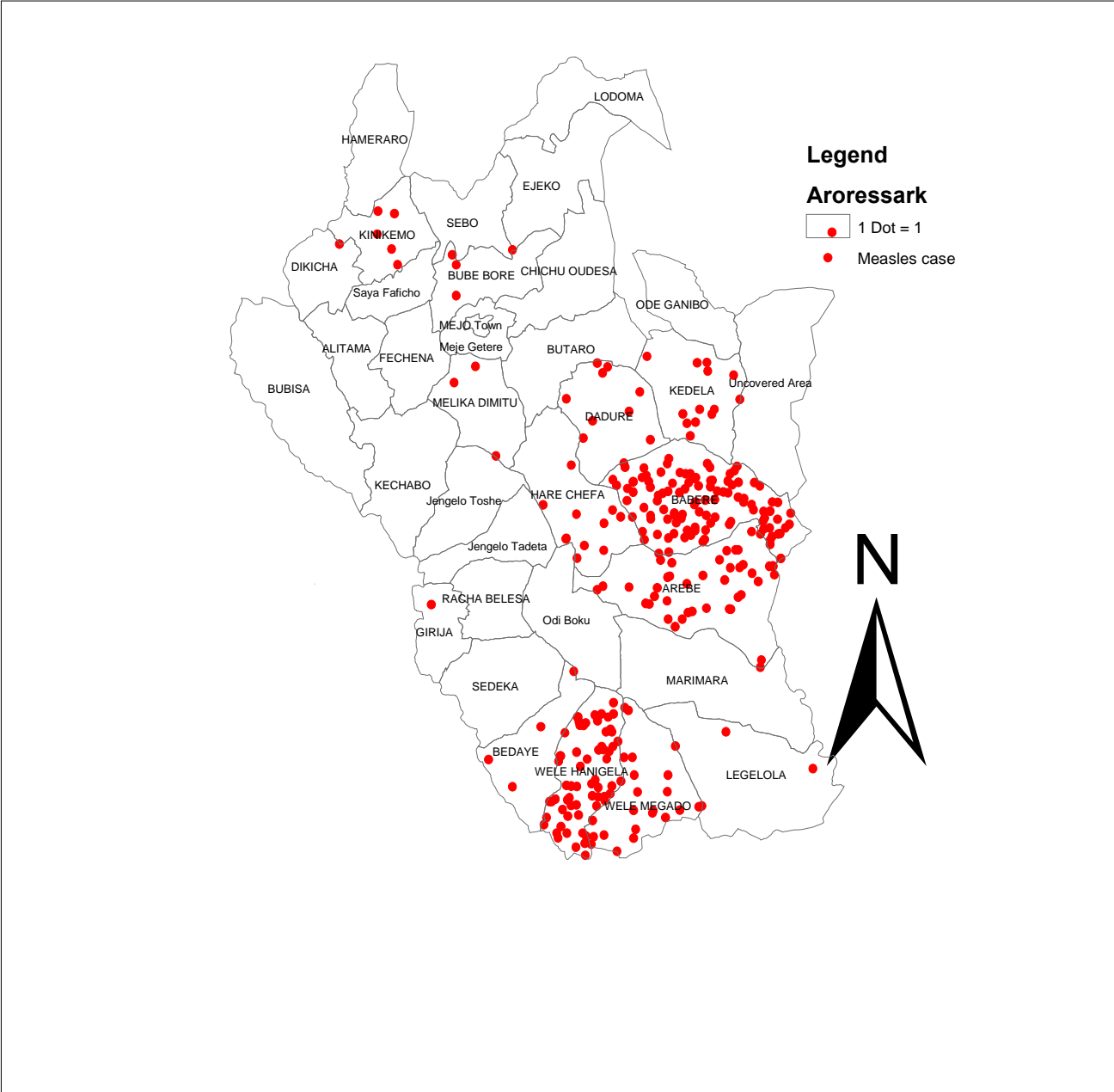
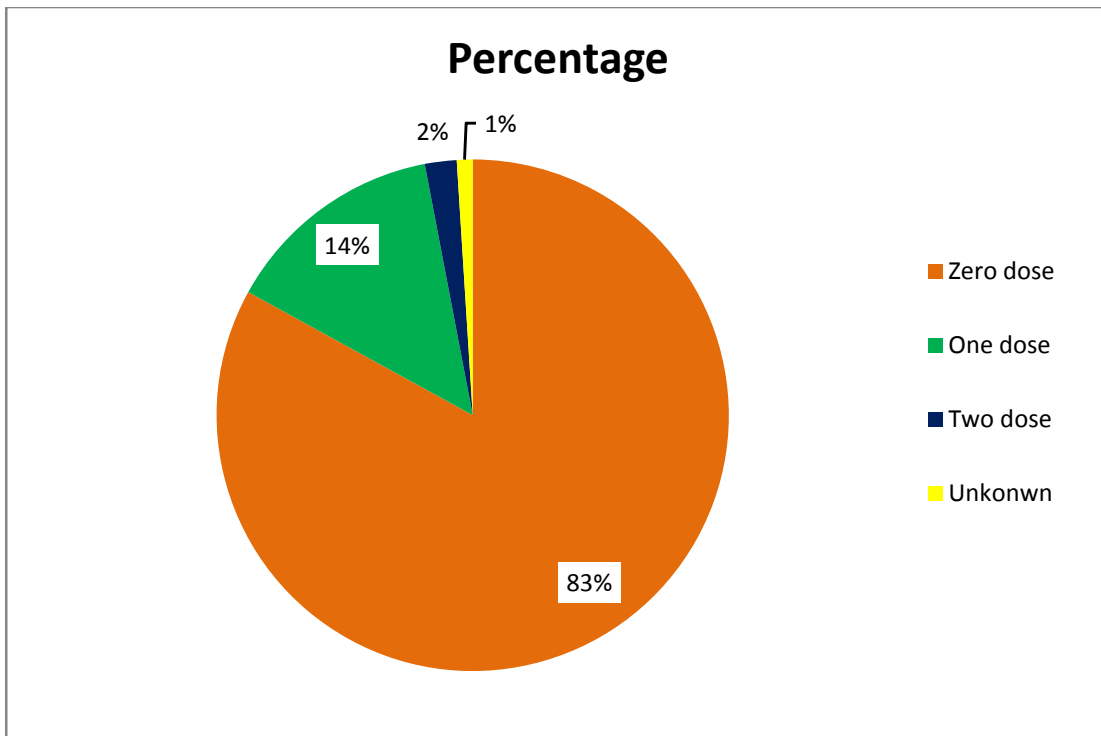
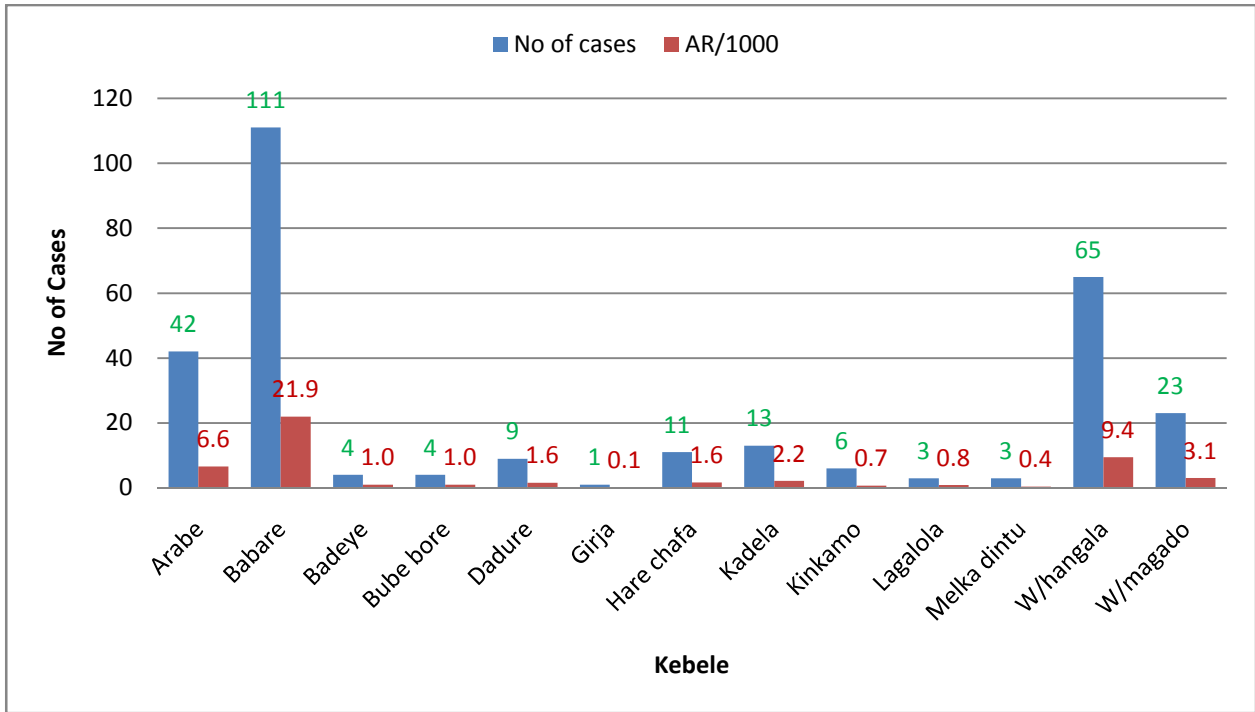
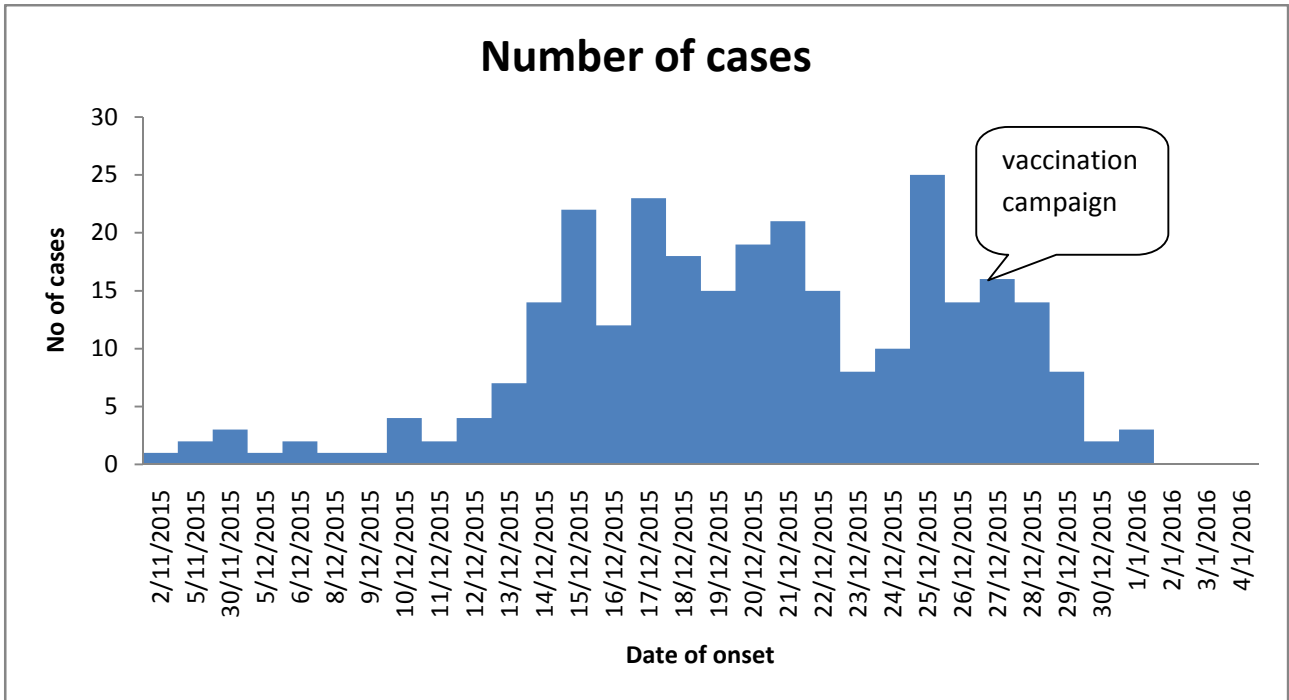
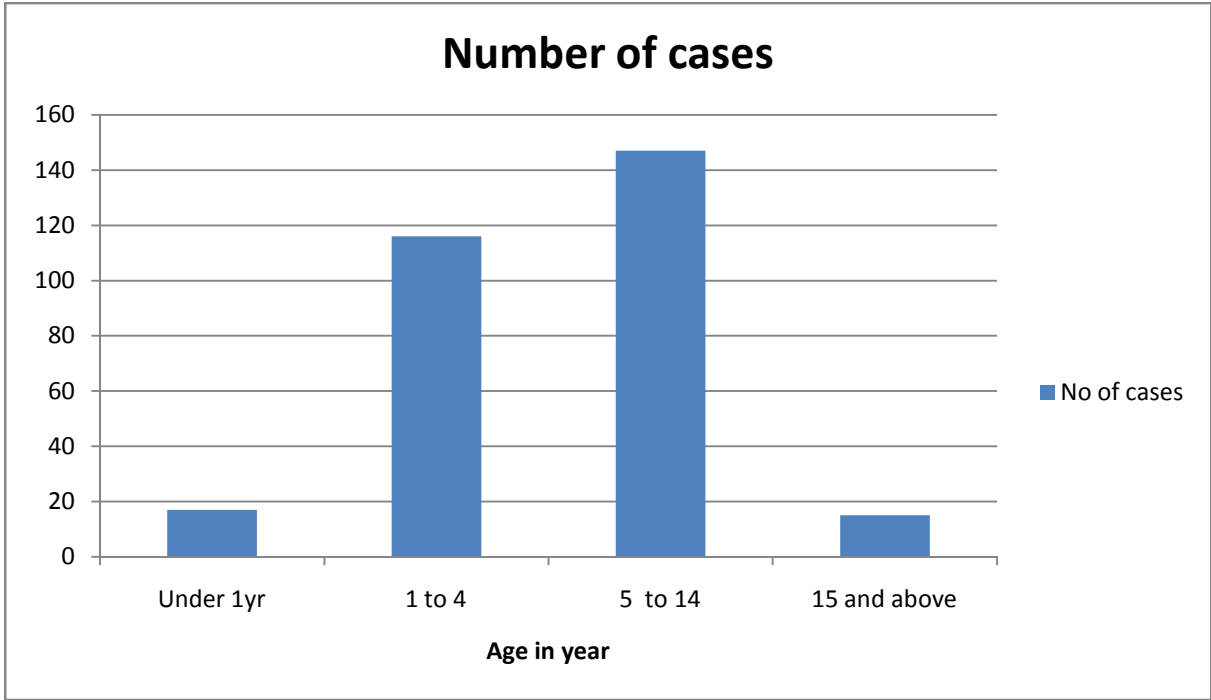


Figure 9.2.1 Spot map of measles cases by kebele, in Aroresa district, Sidama Zone, SNNPR 2015-2016





Descriptive and associated results of the case control

A total of 50 cases and 100 controls were recruited in the study. Males constitute 70(47%) and 80(53%) of cases and controls respectively. The mean age of the case and control of study 7 years old with range of 6 month to 35year. All interviewed cases 50 (100%) had rash,38(76%) of cases had conjunctivitis, 34(68%) of cases had cough ,19(38%) of cases had diarrhea and ear discharge was reported only by 3(6%)of cases. From the total cases only 19(38%) visited health facility and 16(32%) cases are visited at home by health extension workers.

Statistical analysis was done to determine the strength of association of risk factors for measles cases as compared to controls and seven statically significant variables were found to be associated with measles as listed below. Travel history two weeks prior to the onset of symptoms came out to be important factors to increase the number of measles cases in the study area 2-3 week with odds ratio of 5.4(2.3,12.7).

Number of rooms for living below four per a house hold also have a significant association with the measles disease with odds ratio of 4.57(1.0,20.7). Number of family size less than or equal to five per a one house hold have a protective effect with measles case with odds ratio of 0.45(0.21 ,0.97).Being educated of mother and father is protective from measles infection with odds ratio of 0.26(0.08,0.79) and 0.23(0.11,0.47),respectively .Being vaccinated is protective with odds ratio of 0.15(0.06,0.38),Knowledge of first dose measles vaccination schedules were came out to be protective from measles with odds ratio of 0.27(0.09,0.84), this shows that case's family that do not know about the schedule of measles vaccination schedule have significant association with the disease.

Table 6.2.1 No of cases (n=50) and their control (n=100) paired with socio demographic status, Aroresa district ,SNNPR, Ethiopia 2016

Demographic information		case	Control	
Gender	Male	21(58%)	49(49%)	
	Female	29(42%)	51(51%)	
Religion	Protestant	41(82%)	93(93%)	
	Muslim	7(14%)	4(4%)	
	Other	2(4%)	2(2%)	
	Orthodox	0(0%)	1(1%)	
Occupation Of father	Farmer	46	80	
	Merchant	4	19	
	Gov worker	0	1	
	Daily laborer	0	0	
	Student	0	0	
	Unemployed	0	0	
	Other	0		
Occupation of Mother	House wife	47	91	
	Merchant	2	7	
	Farmer	1	2	
	Daily laborer	0	0	
	Student	0	0	
	Unemployed	0	0	
	Other	0	0	
Educational level of Father	Unable to read and write	27(54%)	21(21%)	
	Read and write	13(26%)	36(36%)	
	Elementary	10(20%)	37(37%)	
	secondary	0(0%)	2(2%)	
	Above secondary	0(0%)	4(4%)	
Educational level of Mother	Unable to read and write	46(92%)	75(75%)	
	Read and write	2(4%)	17(17%)	
	Elementary	2(2%)	8(8%)	
	secondary	0(0%)	0(0%)	
	Above secondary	0(0%)	0(0%)	

Number of rooms for living	1	17(34%)	30(30%)	
	2	31(62%)	54(54%)	
	3	2(4%)	11(11%)	
	4	0(0%)	3(3%)	
	5	0(0%)	2(2%)	
Family size	2	0(0%)	2(2%)	
	3	6(12%)	16(16%)	
	4	6(12%)	23(23%)	
	5	7(14%)	13(13%)	
	6+	31(62%)	46(46%)	
Number of person sleeping per room	1	1(2%)	0(0%)	
	2	3(6%)	12(12%)	
	3	13(26%)	30(30%)	
	4	8(16%)	23(23%)	
	5	7(14%)	9(9%)	
	6	11(22%)	9(9%)	
	7	3(6%)	11(11%)	
	8	3(6%)	3(3%)	
	9	0(0%)	3(3%)	
	10	1(2%)	0(0%)	
Time taken to reach health post	Less than 10 minute	9(18%)	26(26%)	
	10 to 30 minute	18(36%)	35(35%)	
	30 minute to one hr	7(14%)	12(12%)	
	One hour to two hour	7(14%)	16(16%)	
	Greater than two hour	9(18%)	10(10%)	
Time taken to reach the nearest health center	Less than 10 minute	9(18%)	19(19%)	
	10 to 30 minute	14(28%)	28(28%)	
	30 minute to one hr	6(12%)	13(13%)	
	One hour to two hour	4(8%)	8(8%)	
	Greater than two hour	17(34%)	31(31%)	

Prevention and Control

We conducted mass vaccination campaign for age group under 15 years and prompt active case management were used to control the outbreak. For case management antibiotics, ORS, TTC eye ointment and Vitamin A were used. Also community mobilized using one to five network reducing contact with active measles case and to bring suspect cases to health facility. The estimated target group population under (6month - 15 years) from 25 selected highly risk kebeles were 80,059 and under five (6month -59month) from selected 5 kebeles were 4693. The campaign vaccination coverage was 102% and 108 respectively.

Discussion

More than two hundred ninety five measles suspected cases were found in study area. The attack rate became 373 per 100,000 populations with 2.5 case fatality rate. Considering the Global measles and rubella strategic plan the 2012 -2020 ,the attack rate of the study area is very high and the case fatality is comparable study done in Democratic Republic of Congo(9,10). The finding showed that 5-14 years age of children accounts 50.2% of the total measles cases. Similar study done in Zimbabwe showed that 5-14 year age groups were the most affected age group accounting 53.4% of the cases(11). The last three years average one dose measles vaccination coverage of the district was high ,but 83% of cases from the line list and 86% of cases and 49% control was unvaccinated children. This indicates that the actual vaccination coverage is very low in the district. Factors contributing to this outbreak are presence of large number of unvaccinated children, This vaccination failure lead to accumulation of susceptible children and adolescent(12) . An overcrowding housing condition also contributed for acquiring of measles infection. number of family size greater than or equal to six have a significant association with measles disease and number of living room below four per household have a significant association with the disease .In this study 96 % of cases and 84 % of controls use less than or equal to two room for every activity (2,8).Being educated of mother and father is protective from measles infection respectively (13) . Knowledge of first dose measles vaccination schedules were came out to be protective from measles this shows that case's family that do not know about the schedule of measles vaccination schedule have significant association with the disease. Travel history two weeks prior to the onset of symptoms came out to be important factors to increase the number of measles cases in the study area .

Limitation

The attack rate might be more this may be due to missed children at home, for instance From the total cases included in case control study only 19(38%) visited health facility and 16(32%) cases are visited at home by health extension worker.

Conclusion and recommendation

Despite the last three years administrative measles vaccination coverage was very high the outbreak occurred in the district, there is high contradiction between the reported coverage of measles vaccination in our finding that more than three fourth of the cases were unvaccinated. This huge gap lead us to question the quality and reliability of data reports of the district, however I recommend to do more investigations in the district. According to the result, high number of unvaccinated cases were found and also half of the cases were between 5-14 years of age so that the occurrence of the outbreak might be due to unvaccinated children and accumulation of a large number of susceptible children and adolescent in the district which exacerbated by overcrowding house conditions, illiteracy of cases family, travel history and very challenging topography of the district. Therefore, strengthening Routine Immunizations through SIAs and Improving early detection. Additionally, reporting and referral of suspected measles cases through community based disease surveillance mechanisms should be enhanced and increasing public awareness about measles disease.

Reference

- 1.2.1 Semba RD, Bloem MR. Measles blindness. *Survey of Ophthalmology*, 2004, 49:243255
- 1.2.2 Sharma MK, Bhatia V, Swami HM. Outbreak of measles amongst vaccinated children in a slum of Chandigarh. *Indian Journal of Medical Sciences*. 2004;58:4753.)
- 1.2.3 World Health Organization/ United Nations Children's Fund. GIVS: Global Immunization Vision and Strategy 2006–2015. Geneva, World Health Organization (WHO/IVB/05.05, http://whqlibdoc.who.int/hq/2005/WHO_IVB_05.05.pdf, accessed 11 March 2012
- 1.2.4 World Health Organization, 2009.
- 1.2.5 Wolfson LJ et al. Estimates of measles case fatality ratios: a comprehensive review of community-based studies. *International Journal of Epidemiology*, 2009, 38:192–205.
- 1.2.6 The millennium development report 2009. New York, NY, United Nations 2009 (http://mdgs.un.org/unsd/mdg/Resources/Static/Products/Progress2009/MDG_Report_2009_En.pdf
- 1.2.7 GLOBAL MEASLES AND RUBELLA STRATEGIC PLAN 2012- 2020
- 1.2.8 Implementing Best Practice Measles SIAs The Ethiopia Experience 2011
- 1.2.9 Description of a large Measles epidemic in Democratic Republic of Congo, 2010-2013
- 1.2.10 GLOBAL MEASLES AND RUBELLA strategic plan 2012 -2020
- 1.2.11 Measles outbreak investigation in Zaka, Masvingo Province, Zimbabwe, 2010
- 1.2.12 GLOBAL MEASLES AND RUBELLA strategic plan 2012 -2020
- 1.2.13 MEASLES OUTBREAK – A STUDY IN MIGRANT POPULATION IN ALIGARH, U.P)

Chapter 2- Surveillance Data Analysis Report

2.1 Malaria Data Analysis report from 2011 - 2015 in SNNPR , Ethiopia

Abstract

Introduction

Globally, an estimated 3.3 billion people are at risk of being infected with malaria and developing disease, and 1.2 billion are at high risk. The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged under 5 years, who account for 78% of all deaths. Surveillance is an on-going systematic collection, analysis, interpretation and dissemination to the users who need it for action and malaria is one of the priority diseases under surveillance which have high epidemic potential. According to the 5 years national strategic plan for malaria prevention control and elimination in Ethiopia with goals 1. By 2015, achieve malaria elimination within specific geographical areas with historically low malaria transmission 2. By 2015, achieve near zero malaria death in the remaining malarious areas of the country. Surveillance is a key component of the overall strategy to move towards elimination. Supporting strategies, such as M&E, HR development and Operational Research will contribute to achieving this Plan's objectives.

Method

Therefore, the disease occurred as an epidemic in different zones in SNNPR. So analysis of malaria surveillance data is very important to see trends of the disease which help to design prevention and control strategies. This study was designed to analysis the Five year (2011-2015) regional malaria database to describe the magnitude and distribution of the disease in the region.

Result and Conclusion

Majority of the cases were reported from Hawassa city next to Hallaba special district, and list malaria cases reported from Kefa zone and Yeme special districts. High malaria confirmed cases were reported in 2012 however the prevalence was decreasing tremendously until 2015 and it reduced by 4 times compared to the 2012 data. This finding concise with the finding Malaria incidence rates decline, globally including Africa region, in the past decade, by 30% globally between 2000 and 2013 (1,2). However, the actual downward trend was slower between 2011 and 2013, partly due to a reduced rate of increase in ITN coverage. Spatial distribution varied

from areas to areas throughout the 5 years period in the region. However, the trend and the spatial distribution of the data can be important input to do further study, and also to evaluate the intervention program related malaria and take positive measures.

Introduction

Malaria incidence rates are estimated to have fallen, in the past decade, by 30% globally between 2000 and 2013, while estimated mortality rates fell by 47% globally and by 54 % in the WHO African Region (1,2). After a slow start, the pace of decline in malaria incidence and mortality rates accelerated from 2005. For mortality, the rate of decline from 2005 to 2010 was fast enough to attain a 75% reduction over 15 years. However, the actual downward trend was slower between 2011 and 2013, partly due to a reduced rate of increase in ITN coverage. If annual rates of decline that have occurred over the past 13 years are sustained, then by 2015, global malaria case incidence is projected to decrease by 35% and malaria mortality rates by 55%.

Similarly malaria transmission occurs in all six WHO regions. Globally, an estimated 3.3 billion people are at risk of being infected with malaria and developing disease, and 1.2 billion are at high risk (>1 in 1000 chance of getting malaria in a year). The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged under 5 years, who account for 78% of all deaths (3).

Besides the high incidence rate of malaria, its seasonal variation in Ethiopia make the problem as a public health problem. Malaria transmission exhibits a seasonal and unstable pattern in Ethiopia, with transmission varying with altitude and rainfall. The major malaria transmission season in the country is from September to December, following the main rainy season from June/July to September. There is a shorter transmission season from April to May following the shorter rainy season in some parts of the country. Currently, areas <2,000 meters of altitude are considered malarious (4).

According to the world malaria report, fifty-eight countries are projected to achieve >75% reductions in malaria mortality rates by 2015. Larger percentage decreases in case incidence and mortality rates are estimated in countries with the lowest malaria burdens in 2000. Progress in reducing incidence and mortality rates has been faster in countries with smaller estimated numbers of malaria cases and deaths. However, this does not imply a lack of impact in higher

burden countries; indeed, many deaths were averted during 2001–2013 in countries with high malaria burdens. Not all of the cases and deaths averted can be attributed to malaria interventions. Some progress is likely to be related to increased urbanization and overall economic development, which lead to improvements in housing and nutrition (5).

However, the target of Millennium Development Goal (MDG) 6 “to have halted and begun to reverse the incidence of malaria” (Target 6C) has been achieved in the coverage and financing of malaria control programs between 2000 and 2015. The number of malaria cases globally fell from an estimated 262 million in 2000 to 214 million in 2015, a decline of 18%. Most cases in 2015 are estimated to have occurred in the WHO African Region (88%), followed by the WHO South-East Asia Region (10%) and the WHO Eastern Mediterranean Region (2%) (6).

An increasing number of countries are moving towards elimination of malaria. Whereas only 13 countries were estimated to have fewer than 1000 malaria cases in 2000, 33 countries are estimated to have achieved this milestone in 2015. Also, in 2014, 16 countries reported zero indigenous cases (Argentina, Armenia, Azerbaijan, Costa Rica, Iraq, Georgia, Kyrgyzstan, Morocco, Oman, Paraguay, Sri Lanka, Tajikistan, Turkey, Turkmenistan, United Arab Emirates and Uzbekistan). Another three countries and territories reported fewer than 10 indigenous cases (Algeria, El Salvador and Mayotte [France]). The WHO European Region reported zero indigenous cases for the first time in 2015, in line with the goal of the Tashkent Declaration to eliminate malaria from the region by 2015. Cases and deaths averted.

In sub-Saharan Africa, it is estimated that malaria control interventions accounted for 70% of the 943 million fewer malaria cases occurring between 2001 and 2015, averting 663 million malaria cases (range: 542–753 million). Of the 663 million cases averted due to malaria control interventions, it is estimated that 69% were averted due to use of insecticide-treated mosquito nets (ITNs) (UI: 63–73%), 21% due to artemisinin based combination therapy (ACT) (UI: 17–29%) and 10% due to indoor residual spraying (IRS) (UI: 6–14%). Especially for pregnant mothers, the proportion of pregnant women receiving at least three doses of intermittent preventive treatment in pregnancy (IPTp) has increased since WHO revised its recommendation in 2012. In 2014, an estimated 52% of eligible pregnant women received at least one dose of IPTp, 40% received two or more doses, and 17% received three or more doses. The difference between the proportion of women attending antenatal care (ANC) clinics and the proportion

receiving the first and subsequent doses of IPTp suggests that opportunities to deliver IPTp at these clinics were missed. In sub-Saharan Africa, the proportion of women receiving IPTp varied across the continent, with 10 countries reporting more than 60% of pregnant women receiving (6).

Accurate assessments of the levels and time trends in malaria burden are crucial for the assessment of progress towards goals and the focusing of future efforts. Less analysis has been done for time trends; only the World Malaria Reports for 2010⁴ and 2011²¹ produce estimates over time with both suggesting reductions in malaria mortality compared with the previous decade. The NSP aims to achieve a high quality, broadly based malaria infection detection, investigation and response 'Surveillance System' to further reduce malaria transmission and improve the detection and timely response to malaria epidemics. Ethiopia was one of the first countries to embrace the SUFI concept for malaria control. Since 2005, over 20 million long-lasting insecticidal nets have been delivered to around 10 million homes in malarious areas of Ethiopia, resulting in the highest reported household ownership of ITNs in Africa. In addition, the indoor residual spraying program has been scaled-up. Treatment with Artemisinin-based combination therapy has been rolled out nationwide through health facilities including through the Health Extension Worker network, alongside improved diagnosis with Rapid Diagnostic Tests.

As a result of the huge scale-up in malaria prevention and treatment that has occurred since 2005, health facilities are reporting sustained reductions in both cases and malaria-related deaths, even during the height of the transmission season. These scale up efforts have spillover effects towards goals of broadly reducing both maternal and child mortality. In the coming years, Ethiopia will need to build on and sustain the tremendous progress that has already been made, ensure that the quality of the services delivered is high, and will need to further strengthen some key areas such as indoor residual spraying, diagnosis, rational drug use and surveillance, including epidemic surveillance and response.

The 2011-2015 NSP will focus on sustained control and moving towards malaria elimination through an integrated community health approach, especially in areas of unstable malaria transmission, building on SUFI achieved by the 2005-2010 strategic plan. The 2011-2015 NSP will achieve these ambitious goals by integrating specific interventions within the overall health

system and relying on strong community involvement through the HEP. Surveillance is a key component of the overall strategy to move towards elimination. Supporting strategies, such as M&E, HR development and Operational Research will contribute to achieving this Plan's objectives (7).

Rational of the study

Surveillance is an on-going systematic collection, analysis, interpretation and dissemination to the users who need it for action and malaria is one of the priority diseases under surveillance which have high epidemic potential. According to the 5 years national strategic plan for malaria prevention control and elimination in Ethiopia with goals 1. By 2015, achieve malaria elimination within specific geographical areas with historically low malaria transmission 2. By 2015, achieve near zero malaria death in the remaining malarious areas of the country. Surveillance is a key component of the overall strategy to move towards elimination. Supporting strategies, such as M&E, HR development and Operational Research will contribute to achieving this Plan's objectives (7).

Therefore, the disease occurred as an epidemic in different zones in SNNPR. So analysis of malaria surveillance data is very important to see trends of the disease which help to design prevention and control strategies. This study was designed to analysis the Five year (2011-2015) regional malaria database to describe the magnitude and distribution of the disease in the region.

Objectives

General objective

To assess the Magnitude and trend of Malaria morbidity and mortality in SNNPR region from 2011-2015.

Specific objectives

- To assess the magnitude of Malaria burden in the Zones (SNNPR)
- To describe the trend of Malaria in the last 5 years data
- To describe spatial distribution of malaria by zone in SNNPR

Method

Study area and period

The study was conducted in SNNPR regional health bureau from 10-25 April , 2016. SNNPR is one of the 9th regional States in Ethiopia. The total population of the region is 18,719,008 from the total population 9,172,314 M and 9,546,694 Female. The region surveillance data were collected from 14 Zones, 4 Special District and 1 city.

Study design

Descriptive cross sectional study design has been employed on routine weekly surveillance data.: The data was obtained from Southern nations Nationalities and Peoples Region public health emergency management unit weekly reportable surveillance database reported in 2011-2015.

Operational definition

Case definition Any person with fever or fever with headache, back pain, chills, rigor, sweating, muscle pain, nausea and vomiting or suspected case confirmed by RDT

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

Confirmed case definition: A suspect case confirmed by microscopy or RDT for plasmodium parasite.

Sample size

All Malaria Confirmed cases/deaths reported over 2011-2015 were included in the analysis.

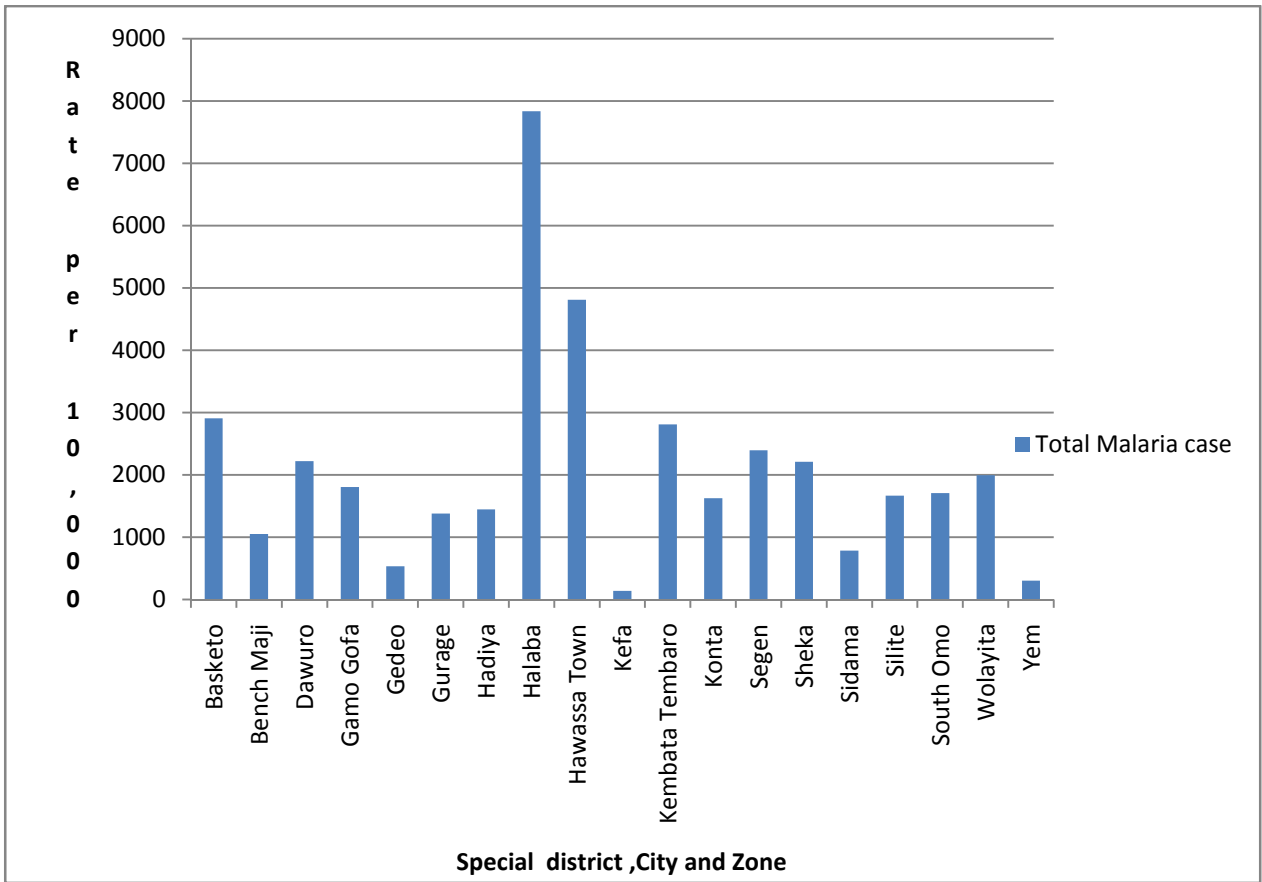
The Study units were number confirmed malaria cases and deaths in years. The nominator was number of Malaria cases or deaths in 2011-2015, and the denominator was demographic data of Population at risk in 2011-2015 was obtained from the projection of 2007 census data. The annual malaria incidence was calculated by using the annual population of each Zone

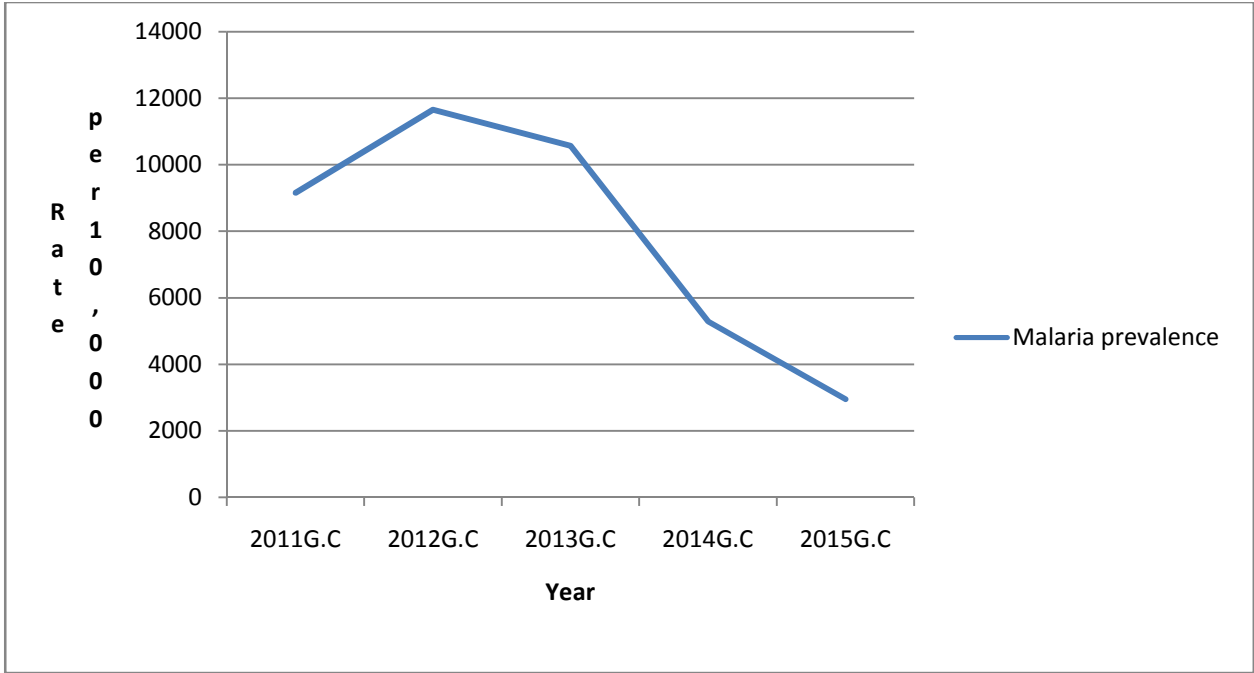
Data collection and procedure

A five years surveillance data were obtained from SNNPR Health bureau of PHEM core process by reviewing weekly surveillance data .

Data processing and analysis

After we checked the data for its completeness and cleanness, Microsoft Office Excel 2010 and Arc GIS was used to organize and analyze the data appropriately





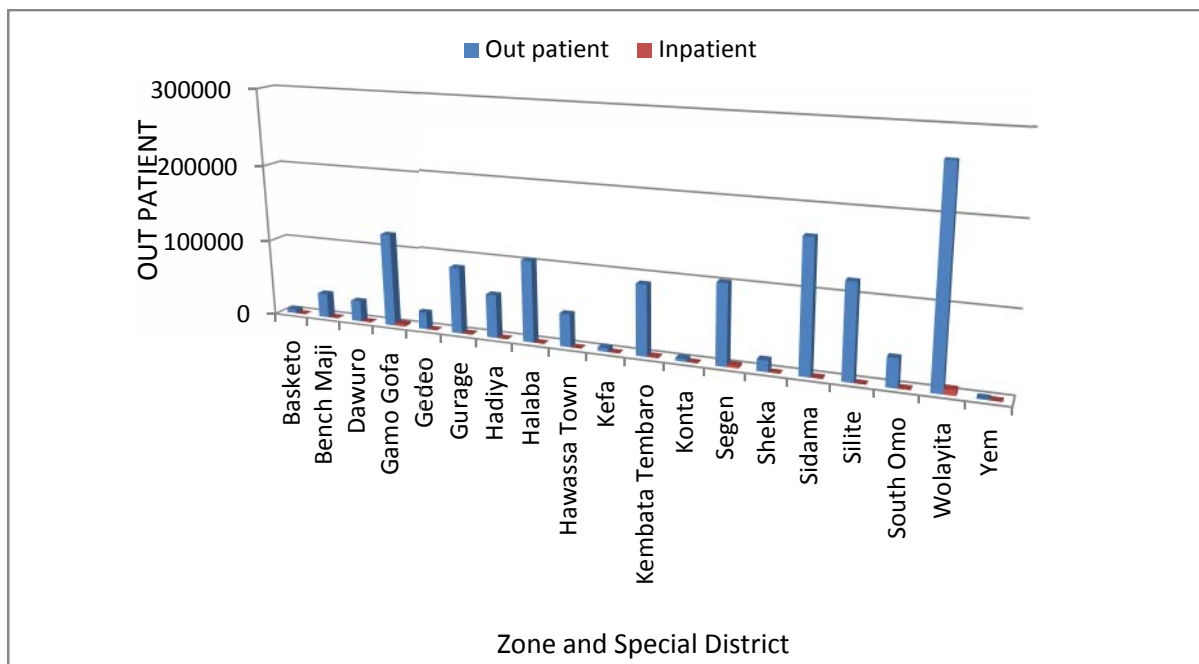


Figure 2.1.3 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2011

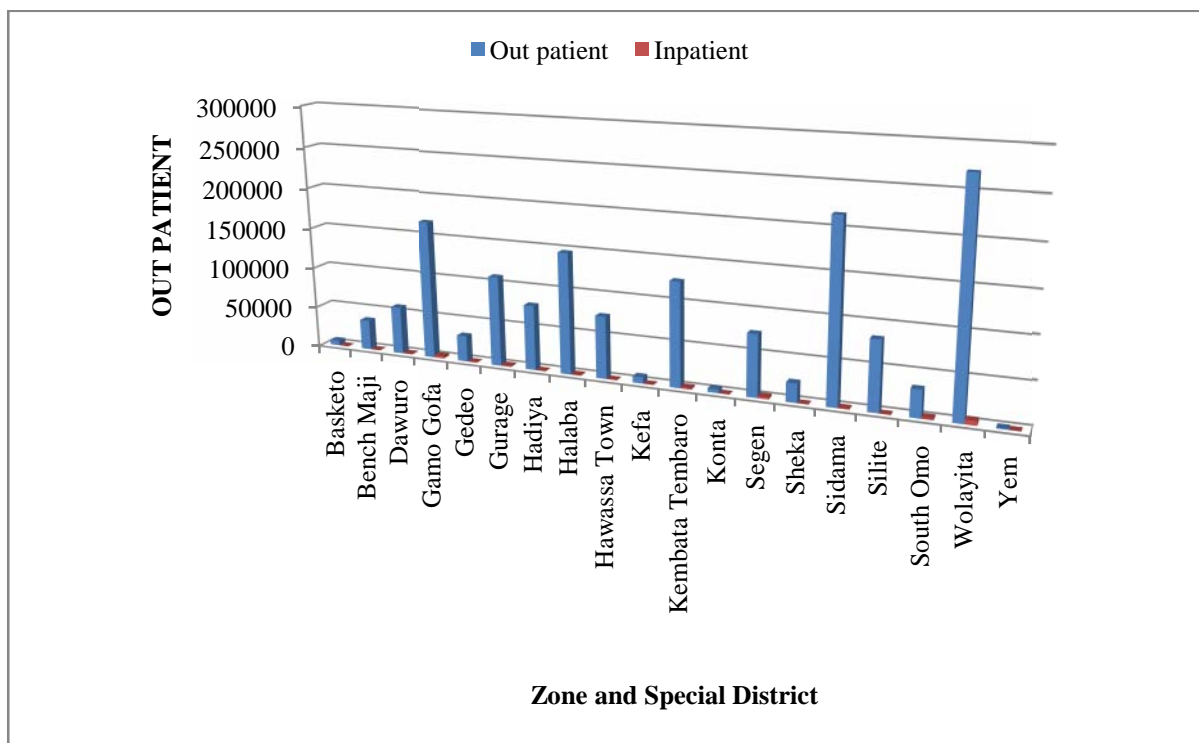


Figure 2.1.4 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2012

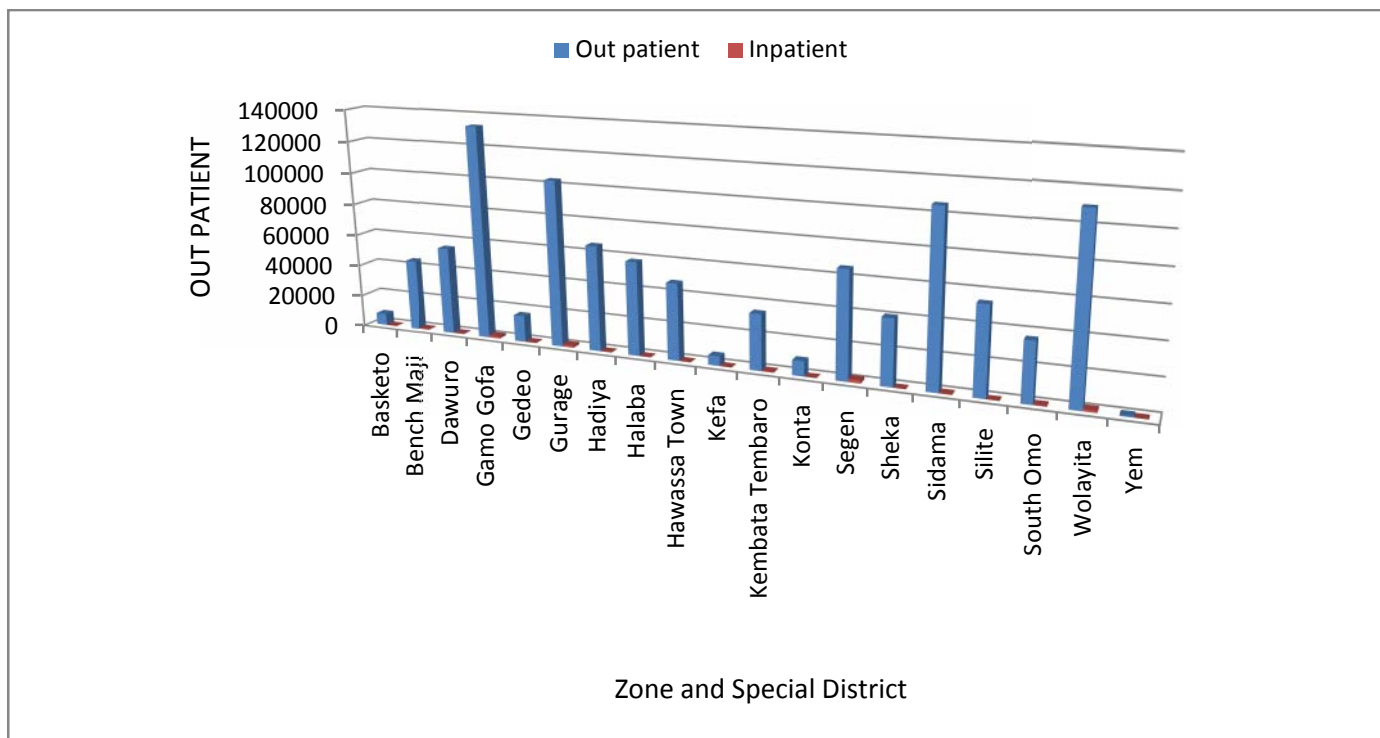


Figure 2.1.5 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2013

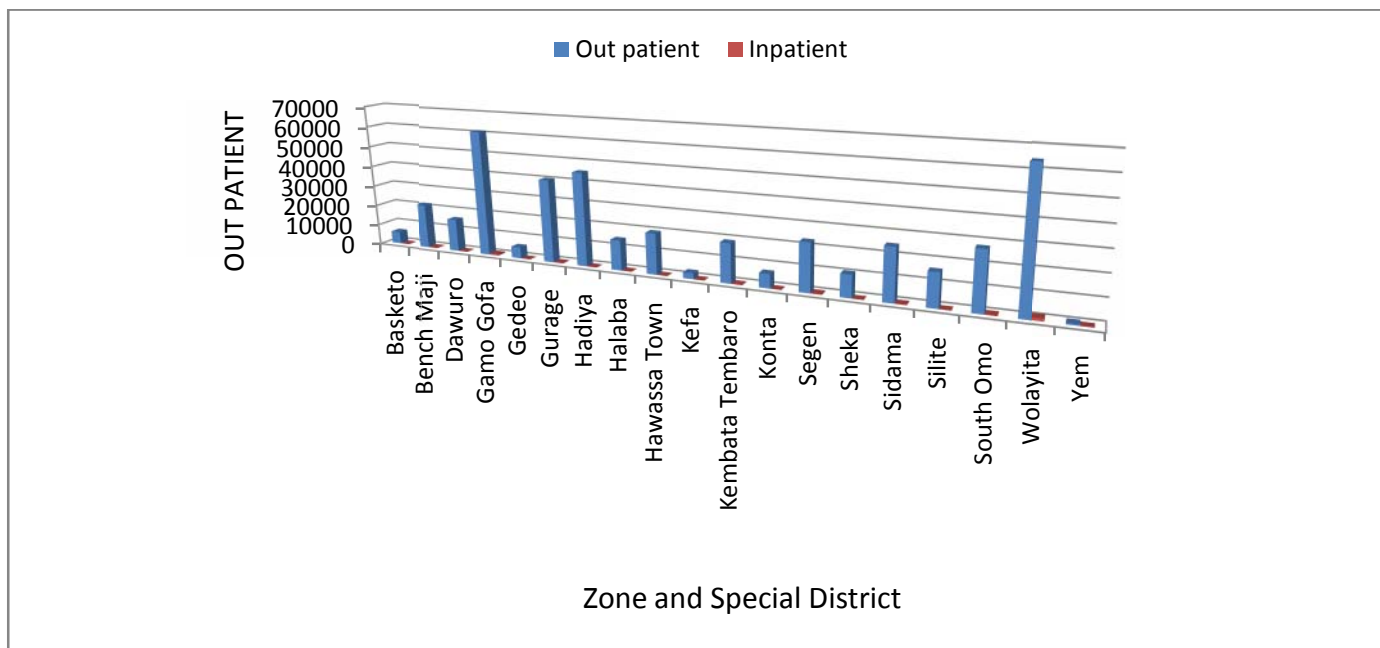


Figure 2.1.6 Malaria Out patient and In patient Casese by zone and special district in SNNPR 2014

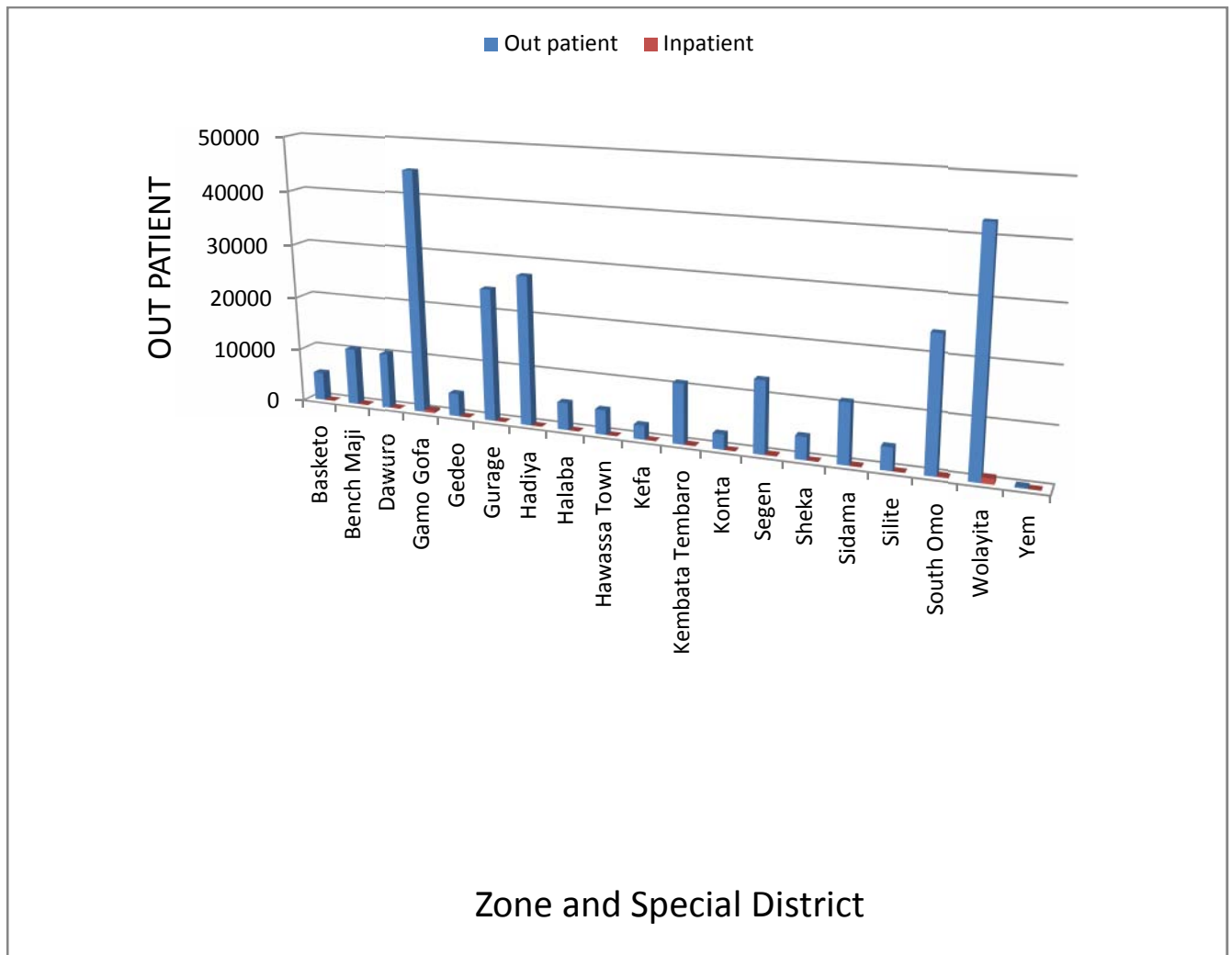


Figure 2.1.7 Malaria Out patient and In patient Cases by zone and special district in SNNPR 2015

Between 2011 and 2015, case fatality rate of the SNNPR have decreased. High case fatality rate 0.06% reported in 2011 in Gamo Gofa zone and Segen people zone , in 2012 high case fatality rate reported from South Omo zone and Basketo special district 0.128 % and 0.119% respectively. Similarly in 2013 the highest case fatality rate reported from Basketo special district and Kefa zone.

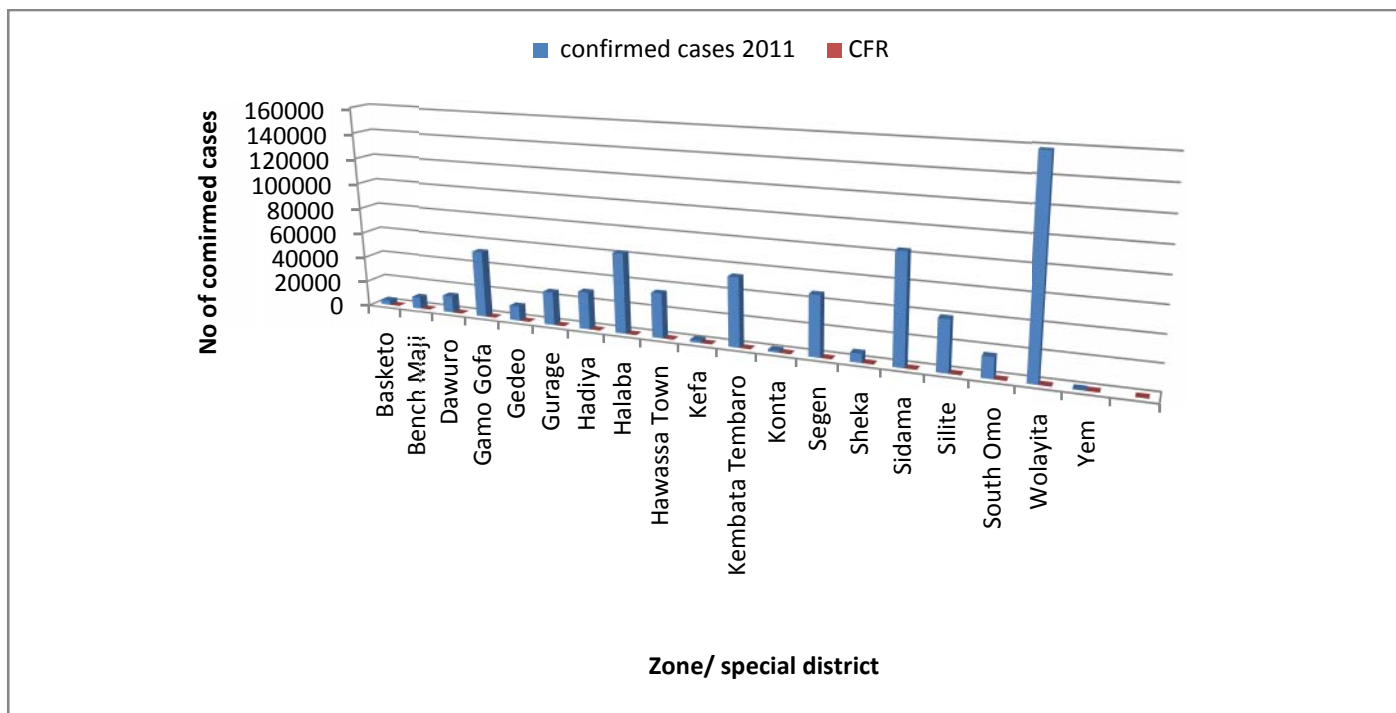


Figure 2.1.8 Confirmed and case fatality rate by zone and special district in SNNPR 2011

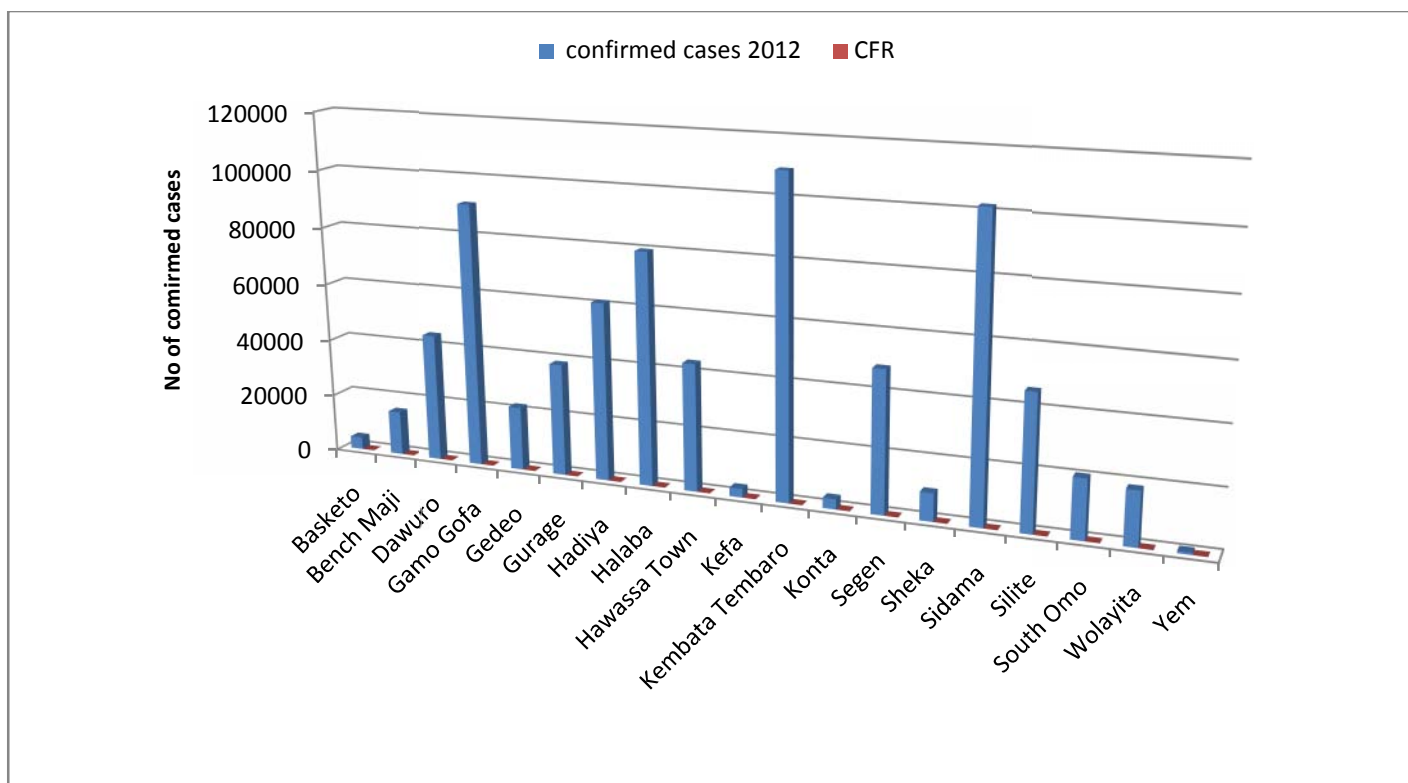


Figure 2.1.9 Confirmed and case fatality rate by zone and special district in SNNPR 2012

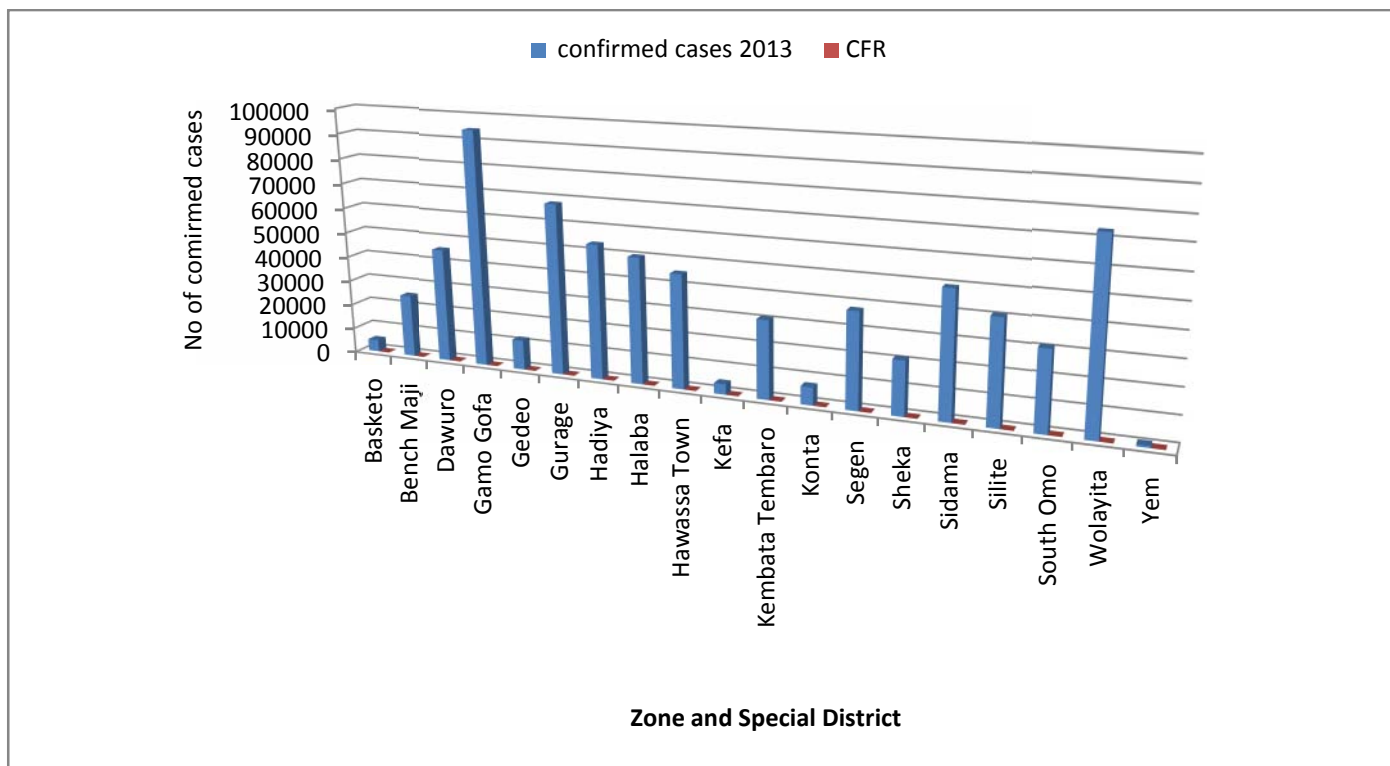


Figure 2.1.10 Confirmed and case fatality rate by zone and special district in SNNPR 2013

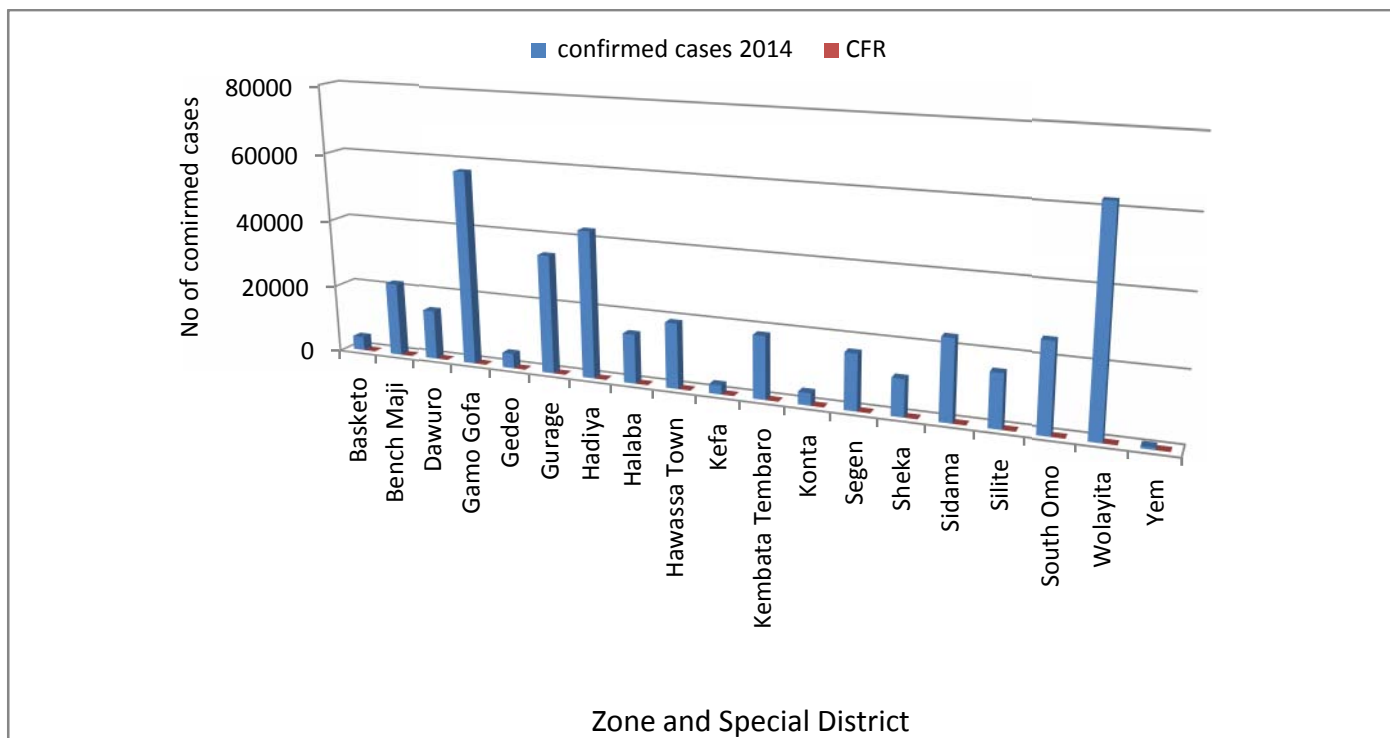


Figure 2.1.11 Confirmed and case fatality rate by zone and special district in SNNPR 2014

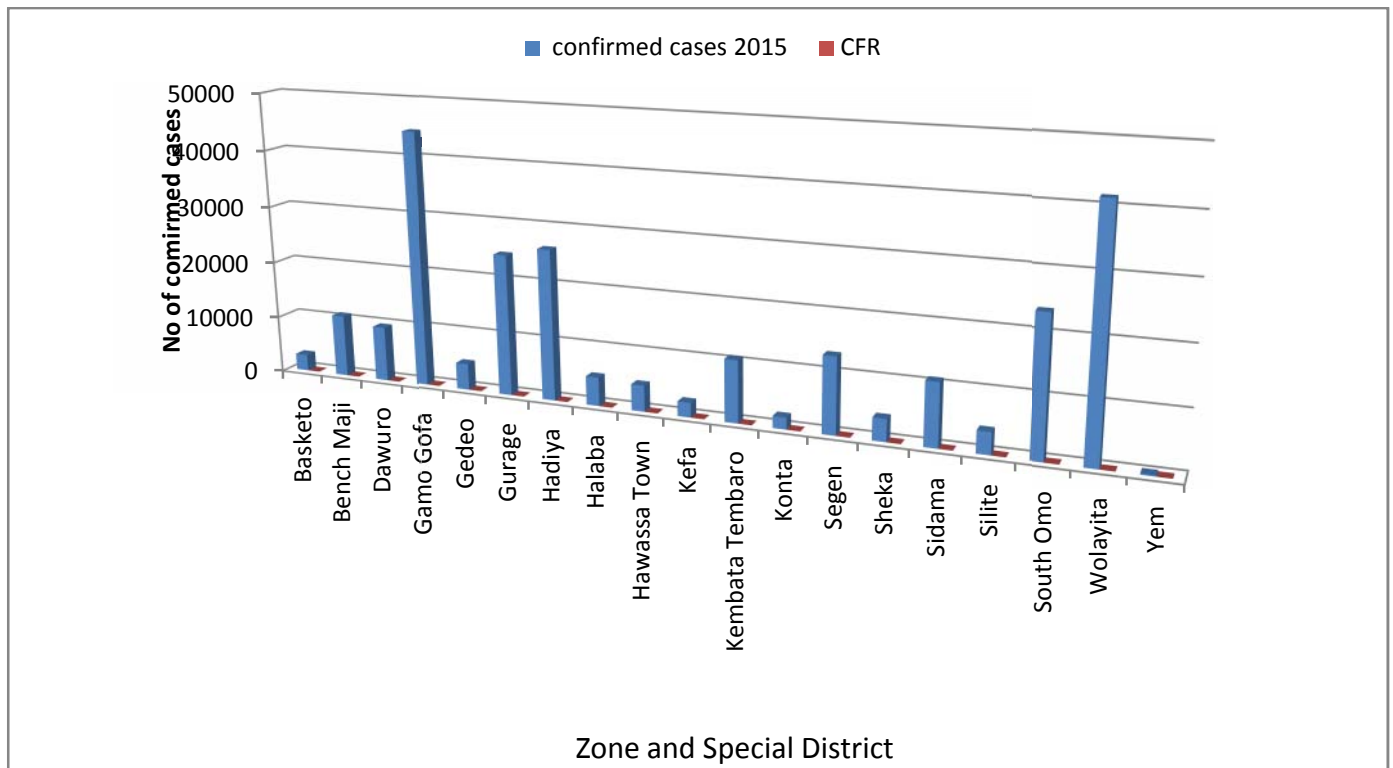


Figure 2.1.12 Confirmed and case fatality rate by zone and special district in SNNPR 2015

Spatial distribution varied from areas to areas throughout the 5 years period in the region (Figure 2.1.13). Stable and low malaria confirmed case distribution observed in Gedio, Kefa zone and Yem special districts. Except Sidama zone, Silti zone and Konta special district, three fourth of the zones and special districts had shown increment in malaria confirmed cases in the past five years. South Omo zone, Gamo Gofa zone, Hadiya zone, Basketo special district were on the top three lists that showed continuous increment in the five years period. Similarly, very high malaria distribution was reported in Hallaba special district reported in the first four years. However, tremendous decline was observed in the last year data, 2015. Irregular distribution was observed in some of the zones in the five years report, such as Sheka, Benchi Maji, Wolayita, Kenbata, Gurage zones.

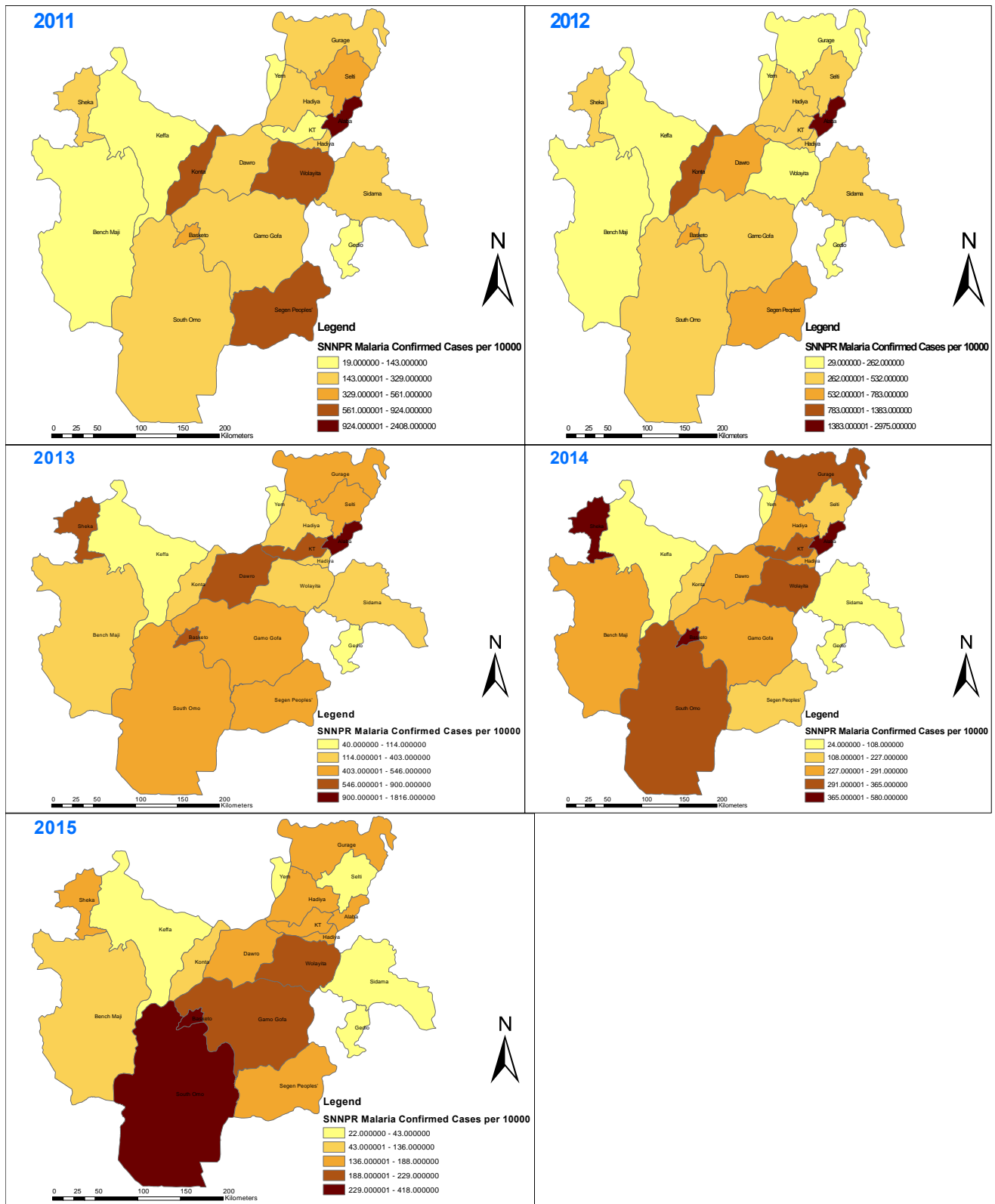


Figure 2.1.13- Annual malaria case at Zonal and special district level in SNNPR, Ethiopia, 2011-2015

Discussion

Majority of the cases were reported from Hawassa city next to Hallaba special district, and list malaria cases reported from Kefa zone and Yeme special districts. High malaria confirmed cases were reported in 2012 however the prevalence was decreasing tremendously until 2015 and it reduced by 4 times compared to the 2012 data. This finding concise with the finding Malaria incidence rates decline, globally including Africa region, in the past decade, by 30% globally between 2000 and 2013 (1,2). However, the actual downward trend was slower between 2011 and 2013, partly due to a reduced rate of increase in ITN coverage.

Spatial distribution varied from areas to areas throughout the 5 years period in the region. Such as stable and low malaria confirmed case distribution observed in three parts of the region. However the other part of the SNNPR region showed either decline or increment in malaria confirmed cases in the past five years. Again irregular distribution was observed in some of the zones in the five years report. According to the 5 years national strategic plan for malaria prevention control and elimination in Ethiopia with goals of achieve malaria elimination within specific geographical areas with historically low malaria transmission, and achieve near zero malaria death in the remaining malarious areas of the country. This variation throughout the SNNPR region in the past five years could be due to ITNs distribution and utilization, indoor residual spraying program haven't been implemented according to the 5 years national strategic plan (7).

The limitation of the finding deserve to be mentioned that the data was not complete to do the analysis. Such as age specific data and sex was not complete in the weekly surveillance data base. Therefore, it was difficult to present the prevalence of malaria confirmed case by sex and age categories in the study region. Similarly, pregnant mothers' malaria confirmed case data was not available. So that MOH has to complete age categories and sex in weekly surveillance data base. However, the trend and the spatial distribution of the data can be important input to do further study, and also to evaluate the intervention program related malaria and take positive measures.

Conclusion and recommendation

Generally malaria incidence was decline in study region, concise with globally& Africa region finding, however the actual down ward trend was slower for the first three years of period and this might be partly due to poor ITNs coverage and utilization. In some parts of the region increment in malaria cases was identified in five years period. Additionally irregular distribution were observed in some parts of the region. Considering the Ethiopian NSP to eliminate malaria and to achieve near zero malaria death by 2015, the irregular distribution and increment in malaria cases in this region might be an indication for not achieving the strategic plan. Therefore, SNNPR should revise their intervention approach specially in the areas where high increment and irregularity observed such as South Omo zone , Gamo Gofa zone, Hadiya zone , Basketo special district, Sheka, Benchi Maji, Wolayita, Kenbata, Gurage zones.

Reference

- 2.1.1 Estimated Malaria Case Incidence Rate, 2000–2013 And B) Estimated Malaria Mortality Rate, 2000–2013
- 2.1.2 Who. World Malaria Report 2014. Geneva: World Health Organization; 2014
- 2.1.3 World Malaria Report 2014
- 2.1.4 National Strategic Plan For Malaria Prevention Control And Elimination In Ethiopia 2011 – 2015
- 2.1.5 2014 World Malaria Report Summary
- 2.1.6 World Malaria Report 2015 Xi
- 2.1.7 National Strategic Plan For Malaria Prevention Control And Elimination In Ethiopia 2011 – 2015.

Chapter 3- Evaluation of Surveillance system

3.1 Surveillance Evaluation of Acute Severe Malnutrition and Measles in Sidama zone SNNPR, Ethiopia, March ,2016

Abstract

Introduction

Public health surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness. Evaluation of a public health surveillance system focuses on how well the system operates to meet its purpose and objectives. The evaluation of public health surveillance systems should involve an assessment of system attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability. Considering Hulla district is one of the district on priority three emergency nutrition together with frequent measles outbreaks, we carried out surveillance evaluation.

Method

A cross-sectional descriptive study was conducted. The study unit was Zonal health department, one district health office, two health centers and four health posts. Data obtained through interviewing and record review. Descriptive data analysis was done using Excel 2007.

Result

Except the zonal level major problems was observed in district, health center and health post levels on different surveillance system. Such as limited data analysis or null was identified, both health centers and health posts did not know health posts to Federal level expected weekly surveillance data report schedule and timely report from health post to health center was very weak.

Conclusion

In order to improve the surveillance system, awareness creation about the importance of doing surveillance at all level. Additionally, creating fast communication system such as good mobile network and access could be an ideal approach to bring good surveillance.

Introduction

Public health surveillance is an ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health. Data disseminated by a public health surveillance system can be used for immediate public health action, program planning and evaluation, and formulating research hypotheses. For example, data from a public health surveillance system can be used to guide immediate action for cases of public health importance; measure the burden of a disease (or other health-related event), including changes in related factors, the identification of populations at high risk, and the identification of new or emerging health concerns; monitor trends in the burden of a disease (or other health-related event), including the detection of epidemics (outbreaks) and pandemics; guide the planning, implementation, and evaluation of programs to prevent and control disease, injury, or adverse exposure; evaluate public policy; detect changes in health practices and the effects of these changes; prioritize the allocation of health resources; describe the clinical course of disease; and provide a basis for epidemiologic research.

Public health surveillance systems have been developed to address a range of public health needs. In addition, public health information systems have been defined to include a variety of data sources essential to public health action and are often used for surveillance. These systems vary from a simple system collecting data from a single source, to electronic systems that receive data from many sources in multiple formats, to complex surveys. The number and variety of systems will likely increase with advances in electronic data interchange and integration of data, which will also heighten the importance of patient privacy, data confidentiality, and system security. Variety might also increase with the range of health-related events under surveillance. In these guidelines, the term “health-related event” refers to any subject related to a public health surveillance system. For example, a health-related event could include infectious, chronic, or zoonotic diseases; injuries; exposures to toxic substances; health promoting or damaging behaviors; and other surveilled events associated with public health action.

The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively. Public health surveillance systems should be evaluated periodically, and the evaluation should include

recommendations for improving quality, efficiency, and usefulness. Evaluation of a public health surveillance system focuses on how well the system operates to meet its purpose and objectives. The evaluation of public health surveillance systems should involve an assessment of system attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability. With the continuing advancement of technology and the importance of information architecture and related concerns, inherent in these attributes are certain public health informatics concerns for public health surveillance systems. Because public health surveillance systems vary in methods, scope, purpose, and objectives, attributes that are important to one system might be less important to another. A public health surveillance system should emphasize those attributes that are most important for the objectives of the system. Efforts to improve certain attributes (e.g., the ability of a public health surveillance system to detect a health-related event [sensitivity]) might detract from other attributes (e.g., simplicity or timeliness)(1).

According to the World Health Organization (WHO), evaluation refers to ‘the systematic and objective assessment of the relevance, adequacy, progress, efficiency, effectiveness and impact of a course of actions, in relation to objectives and taking into account the resources and facilities that have been deployed’(2).

Applied to surveillance, this includes the assessment of a series of evaluation attributes such as sensitivity, acceptability and timeliness, using qualitative, semi-quantitative or quantitative methods and tools. (3).

An evaluation of the public health surveillance system must therefore consider those attributes that are of the highest priority for a given system and its objectives. The capacity of surveillance systems to accurately describe patterns of diseases is of public health importance. Therefore, regular and relevant evaluations of these systems are critical in order to improve their performance and efficiency (4)

The routine flow of surveillance data is usually from reporting sites to the next level up to the central level as indicated in figure3.1.1 below

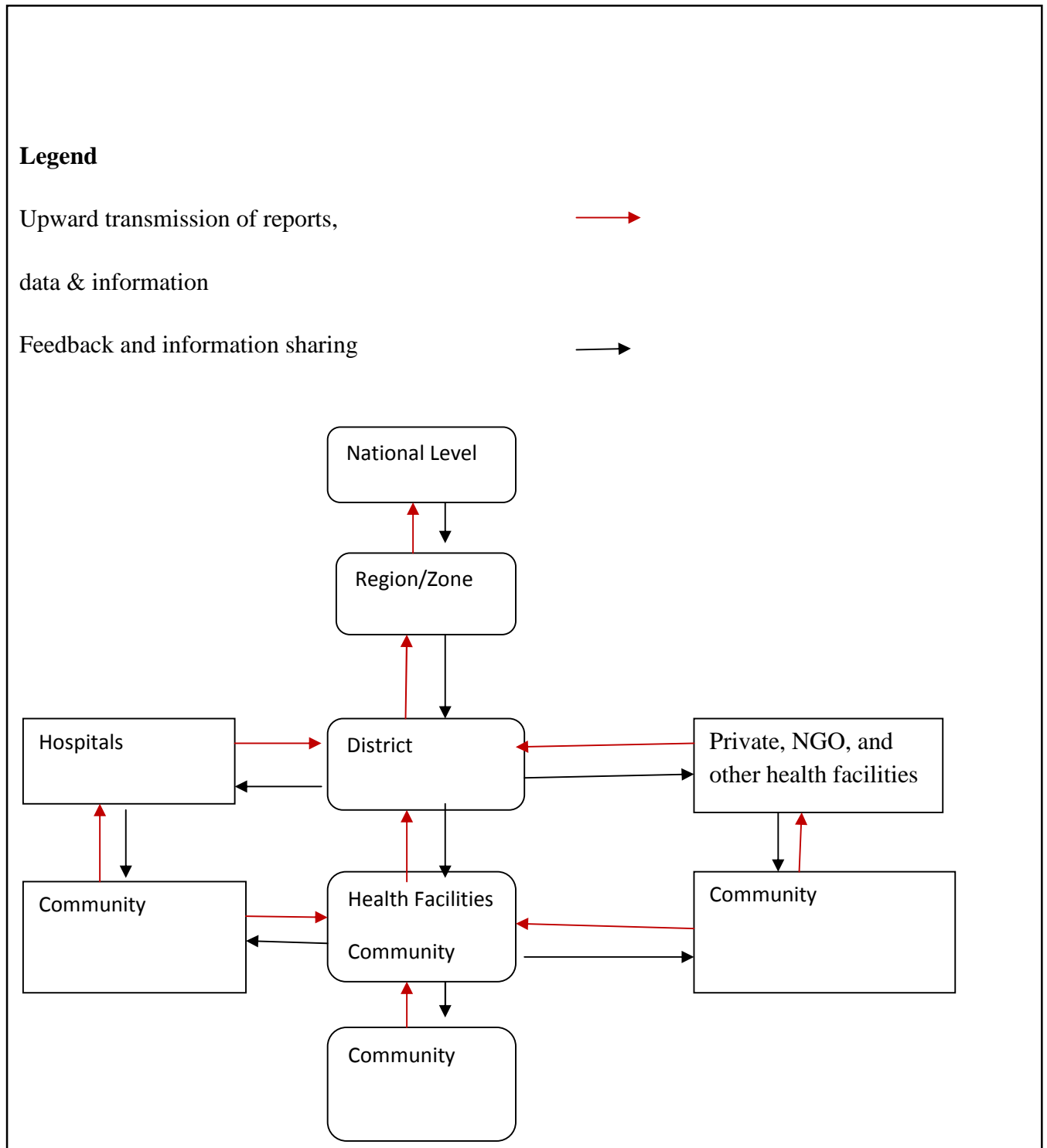


Figure 3.1.1 Diagram illustrating the formal and informal flow of surveillance data and information through the health system

Rationale of the study

Occurrence of frequent measles outbreaks in the Sidama Zone with measles vaccination coverage of more than 95% for the last three years, Hulla district is one of measles outbreak affected district and also the Zone have emergency nutrition in 13 hot spot districts from this Hulla district is one of the district on priority three emergency nutrition . Frequent measles outbreaks indicate weaknesses in the health system more over this , large discrepancies exist between the zone level, district, health centre and health posts level measles case and malnutrition cases registered, reported. This discrepancy was found when I was doing an outbreak investigation in Hula district and Rapid need assessment on malnutrition in hot spot districts in Sidama zone. Therefore, measles and malnutrition surveillance system evaluation findings should contribute to improving the surveillance system.

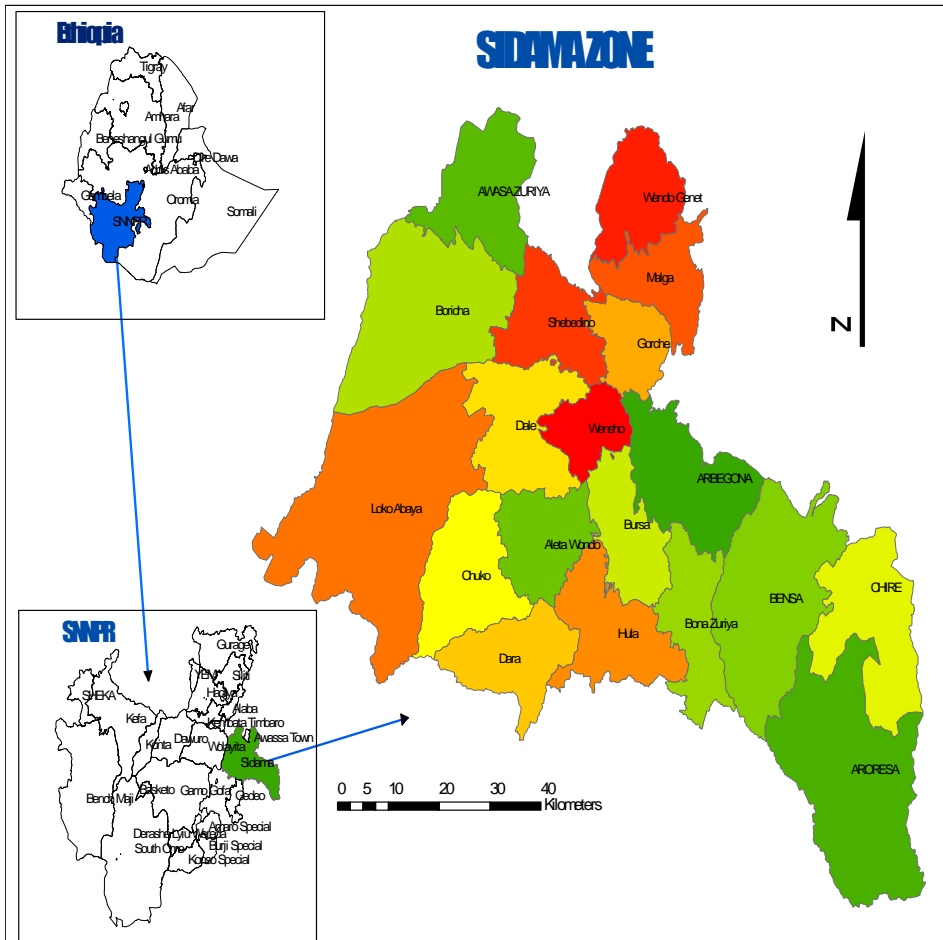
Objective

General Objective:

-To evaluate the surveillance system of measles and Malnutrition in Sidama Zone, SNNPR, from February 29, 2016 to March 4, 2016.

Specific objectives:

- To assess the core activities such as case detection, reporting, data analysis and response surveillance system in Sidama zone.
- To assess different surveillance system attributes such as simplicity, flexibility, data quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability
- To assess supportive activities of surveillance system such as supervision, staff training, information feedback, and financial support.
- To assess documentation system for reported cases
- To identify gaps in the surveillance system and forward recommendations to improve the system



Study Design and participant

A cross-sectional descriptive study was conducted. The study unit was Zonal health department, one district health office, two health centers and four health posts.

Sample Size and Sampling

Zone was selected the relative high burden of the above selected disease for evaluation. The zonal health department, one district health offices, two health centers, four health posts and, totally six health offices/facilities will be included in this evaluation. Selection of the districts and the district health facilities were done recent history of measles outbreak occurrence. Selection of the districts and the district health facilities was done based on the following steps

1. From the zone department, Hulla district health office were selected by its repeated measles outbreak occurrence and relatively high burden of malnutrition cases.
2. From the district, two health centers were selected by which have highly affected kebeles by measles outbreak.
3. From the total health posts under each selected health center, two were selected as above.

Data collection

Data obtained through interviewing PHEM unit Core process owner, officers and health facility surveillance focal persons and HEW using semi structured questionnaire modified from CDC surveillance system evaluation tool utilized to collect the data. Reviewing of records, such as, data base, reporting format, RRT minute book, rumor log book also used as part of the data collection system.

Ethical issues

Official permission letter obtained from Regional Health Bureau and the respective institutions selected for evaluation.

Data Processing and Analysis tool

After cleaning and checking the completeness of the data, descriptive analysis was done.

Case Definition

According to the PHEM guideline there are two case definition A standard case definition and community case definition .

community case definition of measles

A standard case definition of suspected and confirmed cases of measles was used as tool for detecting measles cases. These definitions must be used at all levels including the community, health professionals working at health posts, health centers, hospitals, health offices at different levels, private health facilities, other government health facilities and NGO clinics.

Standard case definition of measles to be used at health centers and above:

Suspected: 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: A suspected case with laboratory confirmation (positive IgM antibody) or epidemiologically linked to confirmed cases in an outbreak.

High risk group: Unvaccinated under 15 years children and Susceptible groups in the community.

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.

Case Definition (Rashes): Any person with fever and vesicular, maculapapular or pustular rashes on any part of the body.

Epidemic Threshold: Occurrence of five or more reported suspected measles cases or 3 measles IgM positive cases in one month in a defined geographic area such as a kebele, district or health facility catchment area.

Community case definition Acute Severe Malnutrition

Children age 6 months to 5 years with MUAC less than 11cm and bilateral leg edema OR
Children age 6 months to 5 years with bilateral leg edema.

Standard case definition Acute Severe Malnutrition

Suspect

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

Confirmed

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

Result

Communication and reporting system

In Ethiopia IDSR has been incorporated as one pillar in the Public Health Emergency Management (PHEM) system under the foresight of the Ethiopian Public Health Institute (EPHI), a specialized agency of the Federal Ministry of Health. The PHEM oversight cascades down to regional level through regional health bureaus, with their zonal health departments and district health offices. Through this system, 21 priority diseases and events have been identified are classified in to two reporting periods depending on their epidemic potential, diseases targeted for elimination and eradication weekly and immediate reporting from the level of health post upwards as indicated in Table below

Table 3.1.1 List of reportable diseases / conditions in Ethiopia

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

Communication and reporting system in the zone level using an E-mail, wired phone, mobile, fax and e-phem. Mobile is a common means of communication at district, Health center and health post level. Zonal PHEM department have the address of the district health office(district health office focal) ,The district health office have address of the health center(health center IDSR focal) as well as the Health post (HEW).

Table 3.1.2 Seven diseases and conditions to be reported weekly to the next reporting level

Reporting facility/institution	Expected reporting day of weeks
Health facilities to District office	Every Monday till midday
District office to Zone/Region	Every Tuesday till midday
Zone to Region	Every Wednesday till midday
Region to EHNRI/PHEM	Every Thursday
EHNRI/PHEM to Stakeholders	Every Friday

The zone department communicate with district health office on emergencies and other daily activity on daily bases .The zonal department and district health office know expected weekly surveillance data report schedules in all level and also reporting their weekly report every Wednesday to the regional PHEM Department. The Zonal PHEM department send summary/short note to the program leader or responsible organization on planning, prevention and control activities addressing important issues at community level that have arisen through the surveillance system.

Communication and reporting system in the Health center level and health post level is mainly using mobile. All health centers have the address of all their catchment health posts. Health centers are communicated with district health office on emergencies and other daily activity on daily bases. At health center level, one of the two health center knew the expected weekly surveillance data report schedule but the other health center focal did not know expected weekly surveillance data report schedule in all level (FMOH to health post level). Health center IDSR

focal did not send summary/short note to the program leader or responsible organ on planning, prevention and control activities addressing important issues at community level that have arisen through the surveillance system. Regarding the health posts, out of the four health posts, 2 of them have the address of supervising Health center IDSR focal. All Health posts are communicated with catchment health center on emergencies and other daily activity on weekly bases. Three health posts did also know the expected weekly surveillance data report schedules to the health center, but all of them did not know Health center to Federal level expected weekly surveillance data report schedule.

Table 3.1.3 : Number of health facilities in Sidama zone ,SNNPR, Ethiopia ,2016

Health facilities	Number	Comment
Hospitals	8	1 zonal and 7 district hospitals
Health centers	127	
Health posts	531	
Mission clinics/NGO clinics	7	
Private clinics	99	
Drug store	35	
Rural drug vender	89	

Availability of Surveillance documentation, registration and forms

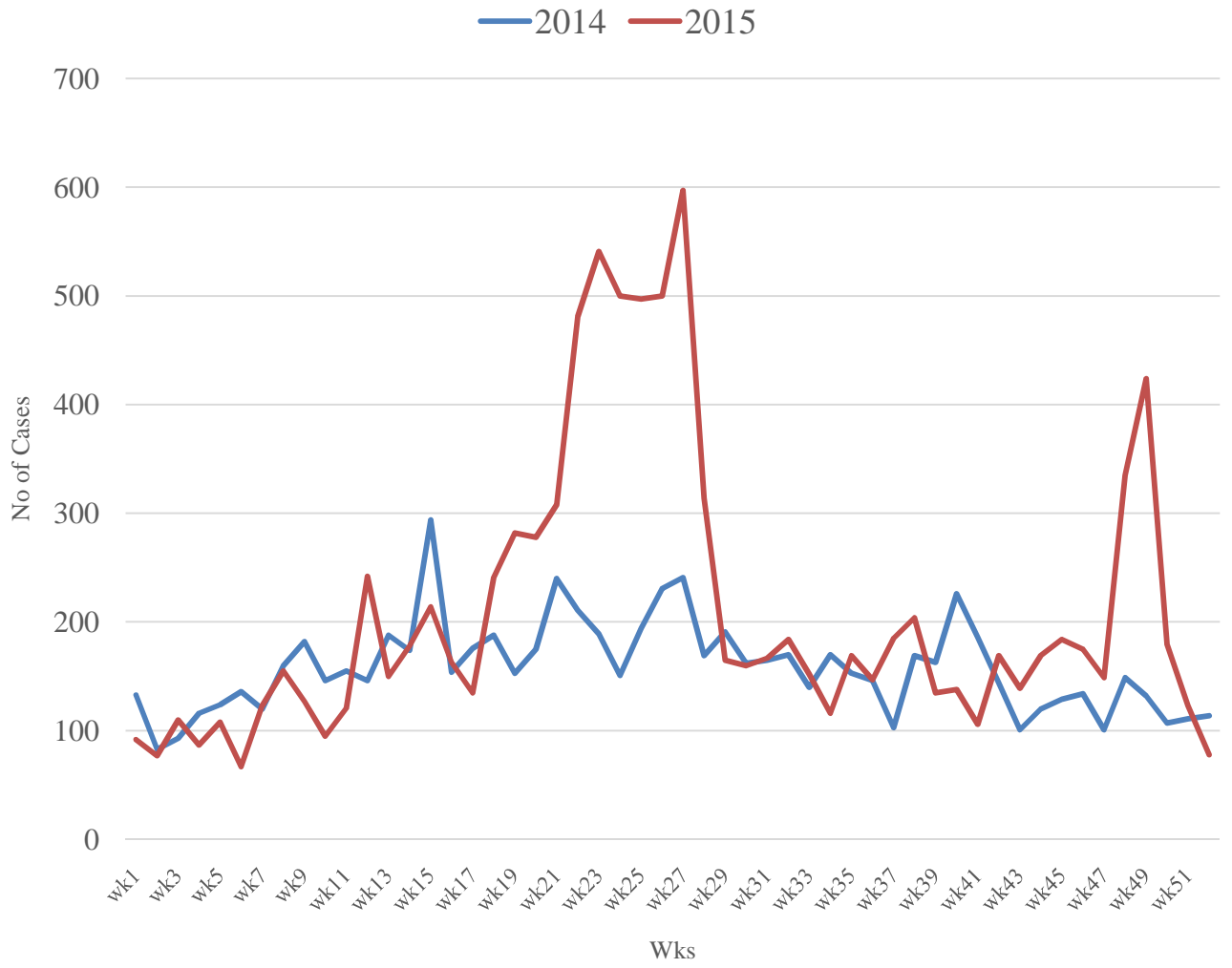
At zonal level there are required surveillance documentation, registration and forms such as National Guideline or management protocol, rumors log book used to document that all reportable events, standards case definitions for all country priority disease which are posted on the wall, case based formats and line list for outbreaks, guide line for specimen collection, handling and transportation to the next level, Zonal EPRP plan which is not funded for Measles and Malnutrition surveillance. Similarly, at district health office and health center level, there are required surveillance documentation, registration and forms such as, standards case definitions for all country priority disease which are posted on the wall, case based formats. Although, only one of the two visited health centers has the line list for outbreaks, guide line for specimen collection, handling and transportation to the next level, National Guideline or

management protocol ,but there were no rumors log book used to document that all reportable events, EPRP plan for Measles and Malnutrition surveillance in district office and all health centers. However at health posts, there were no required surveillance documentation and registration except the case based reporting format.

Data analysis, computer skill and training assessment

The zonal PHEM structure has adequate staffs in the office employed permanently. All zonal PHEM staffs are trained on surveillance system within one year on the different topics such as AFP, Measles, NNT, PHEM Guide line, and maternal mortality. The zone PHEM staffs all have their own desktop/computer and all are functional. Data also compiled on weekly and monthly, quarterly and annual base. Data compilations were done using computers. The department coordinator have skills on MS word/MS excel, MS power point and EPI-info. The department officers also have a computer skills on the above listed computer skills except EPI-info. In the zone level Measles and malnutrition data analyzed on weekly base and described by time, place and person. The analysis result weekly base notified to the lower level PHEM, but the analysis result not notified to the higher level PHEM and there is no weekly bulletin sent to the higher level PHEM. The Sidama zone PHEM department have a functional surveillance data base/EPHEM/ and they started to use e-IDSr software reporting system.

Regarding to district health office and health centers, the district officer and all of the health center IDSr focal were trained on surveillance system within one year on the different topics such as, Measles, PHEM Guide line, Meningitis. the district office have desktop computer and it is functional but, all health centers not have desktop computers. Data compilation has done using manually .The data analysis not done on regular base. The district office officer have skills on MS word/MS excel, but not have a skill on EPI-info. The health center focal not have skills on MS word/MS excel, MS power point and EPI-info. In the district office and health center level Measles and malnutrition data not analyzed on weekly, monthly or annually base and not described by time, place and person. The analysis result not notified to the higher level PHEM. From the total health posts, only half were trained on surveillance system within one year only on the topics Measles and AFP.



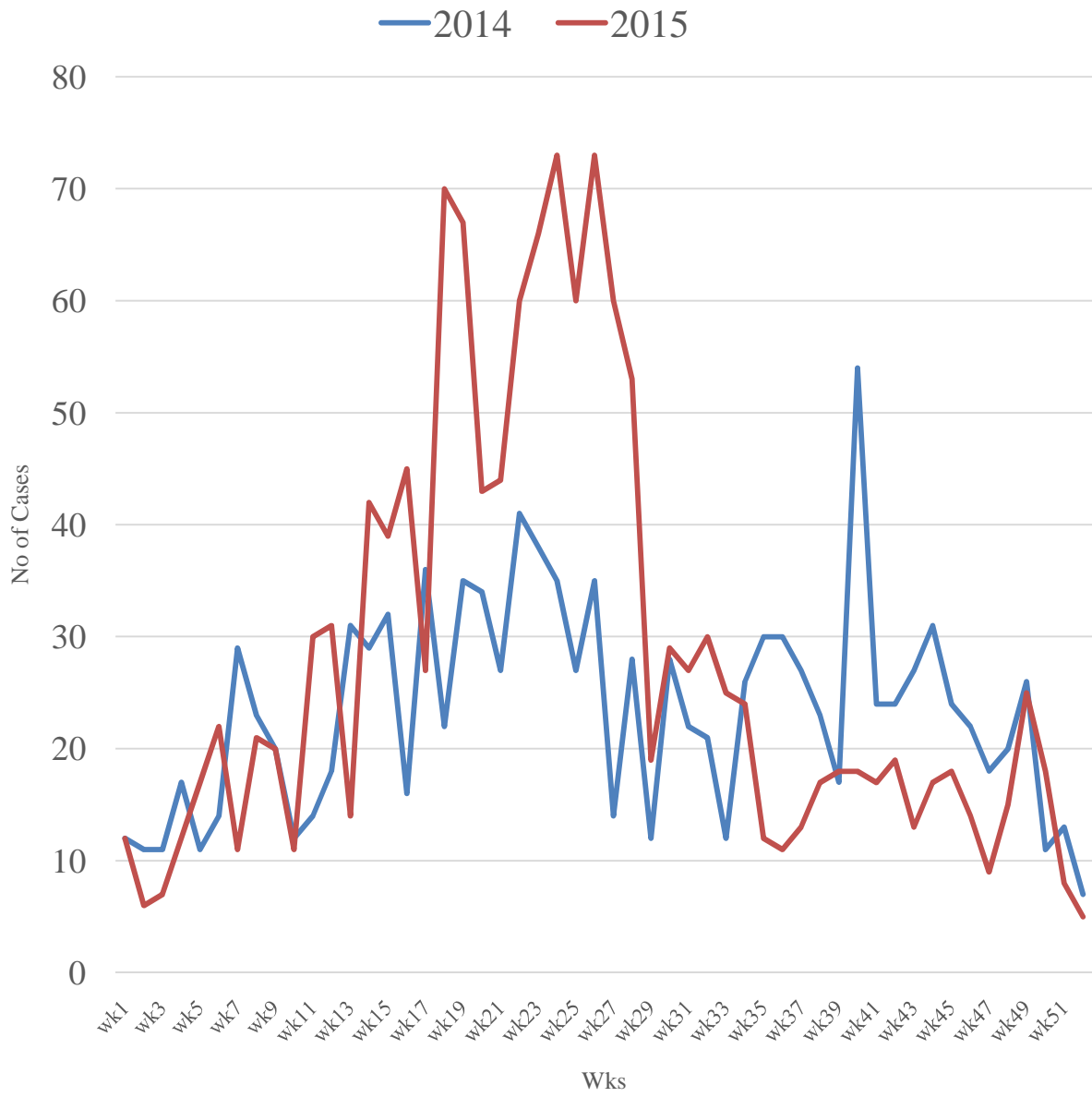


Table 3.1. 4 Measles Indicators, Sidama zone SNNPR, 2010-2015

Indicators	Target	2010	2011	2012	2013	2014	2015
Proportion of reported measles cases with blood specimen	80%	100%	94.9%	100%	100%	100%	98
Proportion of districts with ≥ 1 case per 100,000 with a blood specimen	80%	88%	100%	80%	71%	81%	77%
Annualized rate of investigation of suspected measles cases	≥ 2	3.9	2.9	2.6	4.3	3.5	2.6
Proportion of measles IgM+	$< 10\%$	17.5%	17.3%	0%	41.2	66.7%	60.2
Non Measles Febrile Rash Rate	≥ 2		2.5	2.6	2.5	7	1.1
Proportion of Rubella IgM+	$< 10\%$	2.9%	1%	44.2	29.6	10.8%	25
Timeliness of suspected measles case investigation ≤ 3 days	80%	99%	98.9%	100%	97.1%	98.2%	92.9

Epidemic response and preparedness assessment

The zone has a plan for epidemic response and preparedness, but they did not have emergency stocks of drugs and supplies. They control the epidemics through getting emergency drug and supplies from the Region health bureau. The Zone department experienced shortage of drugs, vaccines and supplies in 2008 EFY. In the zone office level there are epidemic management committee, multi-sectoral emergency preparedness and response task force and rapid response team (RRT) built, but both committee not meet on regular schedule. Partners work together with the department giving technical support. The department has an assigned car for emergencies, but there is no any budget for epidemic response and Health department head has an authority to mobilize the emergency finance.

One of the two health centers has a plan for epidemic response and preparedness, but they did not have emergency stocks of drugs and supplies. They control the epidemics getting emergency drug and supplies from the zone or district health office. One of the health centers has experienced shortage of drugs, vaccines and supplies in 2007 and 2008 EFY. There are epidemic management committee, but there are no multi sect oral emergency preparedness and response task force and rapid response team (RRT) built in the district health office level. There are no epidemic management committee, multi sect oral emergency preparedness and response task force and rapid response team (RRT) built at the health center level. Again, there is no partners work together with the health center and also there is no any transportation vehicles in the district health office and health center level assigned for emergencies. However, the emergency situations in the district health office and health center have been addressed using rental motorbike, waking by foot, and using horse ride. All of the health post not have a plan for epidemic response and preparedness, Unfortunately, all health posts experienced shortage of drugs, vaccines and supplies in 2007 and 2008 EFY Such as BCG, Zinc. Half of the health posts have epidemic management committee but they did not have a regular meeting.

Outbreak investigation and case confirmation assessment

The zone in 2007 and 2008 EFY, in the first two quarter, more than three outbreaks were investigated by RRT using outbreak investigation checklist .The laboratory confirmation was also done in the regional laboratory. At health center level, from the two health centers, one reported outbreak investigation by RRT using outbreak investigation checklist, and the laboratory confirmation was done in the regional laboratory. However, the health center focal were not well informed about the regional laboratory, they only knew about EHNRI.

Supervision and feedback assessment

The zone PHEM department and district office planed to supervise the lower level in quarterly base by 2007 and 2008 EFY using regular supervision checklist. However the zone level supervision was not carried according to the planed schedule. Due to the shortage of man power and work load at office level, the higher level PHEM reviewed about surveillane practice in the zone level once in 2007 and 2008 EFY, and also gave the feedback on supervisory book. Both Health centers and health posts didn't plan for supervision in 2007 and 2008, however the supervision and feedback on supervisory book was carried out by PHEM department for more than five times at health center level. Except the two health posts, similar supervision took place for two health posts such as more than seven supervision in one health post and one time supervision in the other health post.

Surveillance system help

The zonal PHEM department and the health center focal responded that the surveillance system was helpful in the all PHEM level to detect outbreaks early to permit accurate diagnosis. It also helps to estimate the magnitude of morbidity and mortality caused by priority reportable disease. It also gives an opportunity to assessment of the effect of prevention and control program. Similarly, at health center level, the health extension workers responded that the surveillance system was helpful in the all PHEM level to detect outbreaks early to permit accurate diagnosis.

System attribute

Simplicity

The zone ,district health office and the health center responded that case definition all reportable priority disease are easy for case detection by all level health professionals and the surveillance system also allow all level professionals to fill data on reporting formats, micro soft excel /data base it takes less than five minute to fill the format. It also help to record data and report on time and also allow updating data on the cases. The system also has the necessary information for outbreak investigation. All the respondent also reported that laboratory confirmation takes more than a week.

Regarding the health post, the health extension workers responded that case definition all reportable priority disease are easy for case detection by all level health professionals and the surveillance system also allow all level professionals to fill data on reporting formats. The duration to fill the format usually took more than 5 minutes for them. They also underlined the benefits recording data and on time reporting that allow updating data on the cases. Even though, all health extension workers have the necessary information for outbreak investigation; they did not know laboratory confirmation how much time it takes.

Flexibility

The zone and district office responded that the reporting format will be used for other newly occurring health events on easy way which is not difficult to add new variables and to add a new disease on the report. It is easy to integrate with the other health system and also easy to add new information technology like software development and starting using new applications. Similarly, The health center focal and HEW responded that the reporting format will be used for other newly occurring health events on easy way which is not difficult to add a new variables and to add a new disease on the report. It is easy to integrate with the other health system.

Data quality and Acceptability

Regarding the data quality, zonal department, health center focal and HEWs reported that forms are complete and the recorded data are clear to read and understand. All the reporting agents in the zone accept and well engaged to the surveillance activity and identify and report based on

standard case definition and using current and appropriate surveillance reporting format. Nineteen 19 zonal districts and 8 hospitals, 127 health centers, 531 health posts, 7 NGO clinic, 14 private clinics from four town actively participated in the surveillance. But all the health professionals are not aware about the surveillance system in all lower PHEM level and also the reports are not always on time.

However, all the health centers and health posts accepted and well engaged to the surveillance activity and identify and report based on standard case definition and using current and appropriate surveillance reporting format, all the health professionals are not aware about the surveillance system in all health posts and difficulty of sending the report on time.

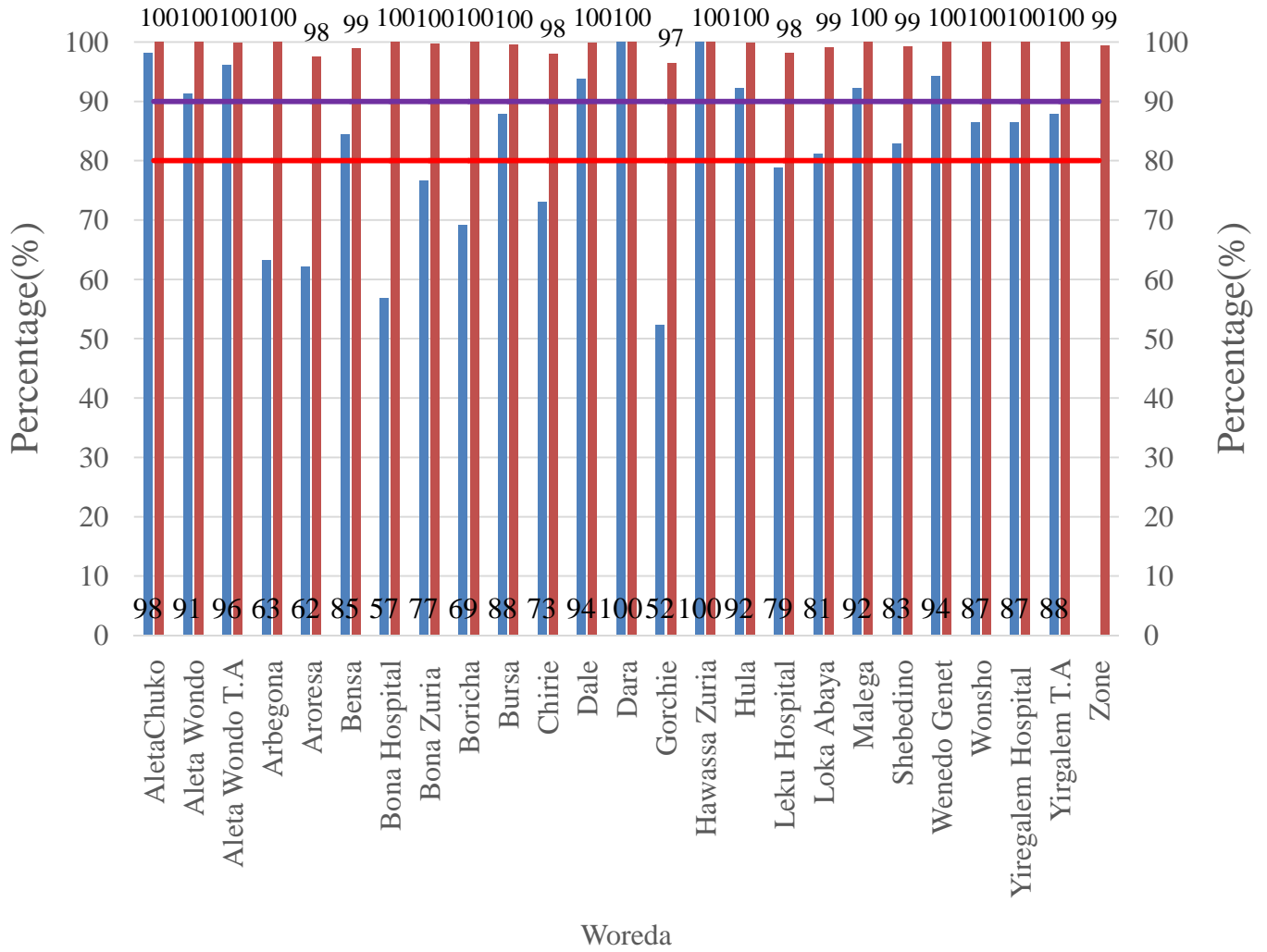
Representativeness

All, the zonal department, health center focal and HEWs reported that surveillance system enabled to follow the health and health related events in the whole community and also the whole community benefited from the system. However, all the socio demographic variables not included in the surveillance reporting format and very challenging to describe the data by specific time, place and person .

Timeliness, Completeness and Stability

All the reporting sites have difficulty of reporting on time to fulfill the weekly report. Regarding the completeness, according to the 2007 and 2008 report, the reports from the Zonal department were 99% and 99.6 % complete respectively. Similarly, health centers reported 80% and 84% completeness in 2007 and 2008 respectively, and also 75% and 86% completeness reported respectively by health posts. Regarding the stability, all reported that there were no interruption of the surveillance system due to lack of resource, but there were a condition that the system not fully operating due to breakdown of telecommunication service.

■ Timeliness(%)
 ■ Completeness(%)
 — WHO Standard Comp.
 — WHO Standard Timeline



Sensitivity

It was difficult to assess the sensitivity of Measles and Sever Acute Malnutrition surveillance system

Predictive value

It was not possible to measure the predictive value positive of the surveillance system in our assessment of the disease. In Ethiopia ,the laboratory confirmation of all suspected case of measles by its case definition couldn't be possible, or not practiced .

Discussion

The Zonal level overall surveillance system such as case detection, reporting, data analysis , response , Surveillance Documentation, data handling and communication with the higher lower level, Staff training on updated surveillance information and refreshment was excellent, but supervision and feedback assessment was limited. This limitation could be not knowing the importance of feedback and supervision in the surveillance system. In general, good surveillance documentation and communication without supervision and feedback could make the surveillance system incomplete. Therefore, refreshment training on supervision and feedback for the responsible body might be very important in order to fill the gaps in the surveillance system that could be created.

The major problems was seen in district, health center and health post levels on different surveillance system. Even though the districts have the raw data and functional computers, they didn't carry out data analysis except reporting the raw data. Similarly at health center and health post level, they did not do data analysis, even manually. In order to make strong scientific decision, only presenting or reporting raw data is not enough, hence doing further data analysis is not optional. Therefore, regular training on how to do data analysis and its importance could be a good input to bring the surveillance data in to action.

Again both health centers and health posts did not know health posts to Federal level expected weekly surveillance data report schedule. Additionally, timely report from health post to health center was very weak. Considering the purpose of having health centers and health posts is to address areas that cannot be reached easily by district and zonal health departments. Weak

communication between this two level could make a huge gap on the decision made by higher officials and the exiting community problem. Therefore, in order to solve the exiting community problem, timely and regular report is very mandatory.

Regarding epidemic preparedness and response, there were no multi sect oral emergency preparedness and response task force and rapid response team (RRT) built in the district health office level, similarly there were no epidemic management committee, multi sect oral emergency preparedness and response task force and rapid response team (RRT) built at the health center level. Poor emergency preparedness and response might be a cause for the common emergency situations in Hulla district. Similarly, in a country like Ethiopia where emergency situations is common, preparedness and response needs to be very strong to tackle emergency situations.

In conclusion, transportation, topography and poor network coverage for mobile communication could be a challenges for the district health office, health center and health post for the existence of poor surveillanc system Therefore in order to improve this poor surveillanc system, firstly creating awareness for the different health system level about the purpose and importance of doing surveillanc in regularly and timely. Secondly, improving the technology such the mobile network and access seem very important and ideal in order to address the challenge. Additionally, more investigation or assessment is need to identify gaps regarding supervision and feedback, and strong collaboration between all level is something very important issue that can addressed to solve the problems and weakness in the surveillanc system.

Reference

1. Centers for Disease Control and Prevention. Updated guidelines for evaluating public health surveillance systems: MMWR 2001;50(No. RR-13)
2. World Health Organization (WHO). Health systems strengthening Glossary(http://www.who.int/healthsystems/hss_glossary/en/index4.html). Accessed 15 December 2014
3. Drewe, J., Hoinville, L., Cook, A., Floyd, T. and Stärk, K. (2012). Evaluation of animal and public health surveillance systems: a systematic review. *Epidemiol. Infect.* 140, 575-590
4. Shahab S. Finding value in the evaluation of public health syndromic surveillance systems from a policy perspective. Alberta, Canada: Alberta Health Services; 2009. Finding value in the evaluation of public health syndromic surveillance systems from a policy perspective; pp. 1–24

Chapter 4-Health Profile Description Report

4.1 Health Profile Description in Boricha District of Sidama zone, SNNPR, Ethiopia

Abstract

Introduction

Health profile is a collection, organizing and summarizing of information about the characteristics of community, the health resource within the community, the community's perceptions of health and to describe health and others health related conditions, demographic, socio-economic, political, cultural and others aspect of a particular geographic areas of interest. This health profile assessment is both a process and a product. It is a process of gathering and interpreting information from multiple and diverse sources in order to develop a deep understanding of the health of a community. It is also a product that uses these results to develop strategies to improve the health status of the community. Its purpose is to promote evidence-based health policymaking through a comprehensive and rigorous analysis of the dynamics of health situations and health systems in the district Therefore, the main objectives of this document are to present compiled information concerning physical and socio-economic condition of the district and its health profile constraints.

Method

Health profile description will be conducted in Boricha district which is one of district of Sidama zone. All required data of last year (2014 G.C) will be collected, analyzed and interpreted from April 16, 2015to April 26 /2015.

Result and Conclusion

The leading cause of adult outpatient visit in the district was AFI which accounts 18% of the total causes of visits. Trauma and intestinal parasites were also other leading causes of adult outpatient visits next to AFI. Pneumonia was the leading cause of under-five outpatient visit in the district. Diarrhea disease was also found to be the major health problem of under-five children of the district next to pneumonia. Water shortage in the district seemed to cause a number of problems, especially in matters related to school hygiene. Even though, an increased coverage of ITN in the district, malaria was remaining to be the community problem. Maternal

and child health services such as delivery and postnatal care services were poorly practiced in the district.

Introduction

Health profile is a collection, organizing and summarizing of information about the characteristics of community, the health resource within the community, the community's perceptions of health and to describe health and others health related conditions, demographic, socio-economic, political, cultural and others aspect of a particular geographic areas of interest. This health profile assessment is both a process and a product. It is a process of gathering and interpreting information from multiple and diverse sources in order to develop a deep understanding of the health of a community. It is also a product that uses these results to develop strategies to improve the health status of the community.

The health profile provides summary health information to support local authority members, officers and community partners to lead for health improvement .It also help to improve availability and accessibility for health and health related information in country.

Factual information helps us to achieve our mission of working together to promote and improve the health of individuals, families and communities. It helps us to identify health issues and priorities in the community.

Its purpose is to promote evidence-based health policymaking through a comprehensive and rigorous analysis of the dynamics of health situations and health systems in the district Therefore, the main objectives of this document are to present compiled information concerning physical and socio-economic condition of the district and its health profile constraints. The main sources of data used for the preparation of the document are Boricha district administration, Agriculture, Health, Educational, Water Resource, culture and tourism, and energy office and Finance office. The document covers almost the data and activities of the period 2014-2015, and all the years are according to the Gregorian calendar. The health profile will be designed to help local government and health services make decisions and plans to improve local people's health and reduce health inequalities, the profiles present a set of important health indicators that show how the area compares to the national average. The indicators are carefully selected each year to reflect important public health topics.

2. Objectives

2.1 General objective

- To develop district health profile for Boricha district in Sidama zone

2.2 Specific objectives

- To assess the health indicators of the district and others health related condition of the district.
- To describe district health status, and to identify problems for priority setting.
- To determine disease burden and communicate health and others health related information.

To assess human resources of the district

3 Methodology

3.1 Study Area

Health profile description will be conducted in Boricha district which is one of district of Sidama zone.

3.2 Study Period

All required data of last year (2014 G.C) will be collected, analyzed and interpreted from April 16, 2015 to April 26 /2015.

3.3 Study Design

- Descriptive cross-sectional study will be conducted using the standard questionnaire.
- Review Hard copy and softcopy of available data in health office, health institution, Finance, Education, Agriculture, Culture & Tourism, Water... In addition, interviewing and discussion with concerned body will also be conducted.
- Review of publications and literatures about the area.
- The findings will be communicated to Boricha district health office and stakeholders

3.4 Data collection methods

Health and others health related data of last year (2014GC) will be collected and reviewed from district health office, education office, water & energy office, district administrative office, Culture and tourism office and different literature and publications to incorporate other un available information.

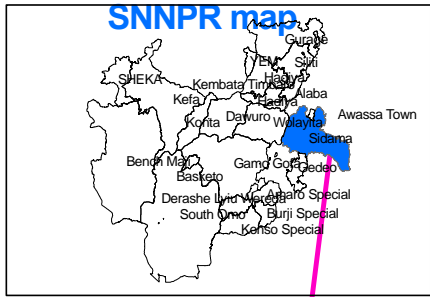
3.5 Data analysis procedures

Data will be processed and analyzed by using Microsoft Office Excel 2007 to organize and analyze the data appropriately.

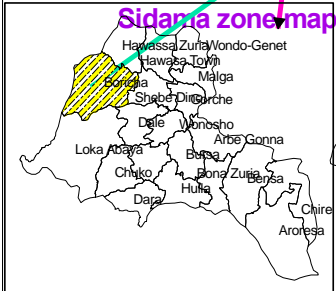
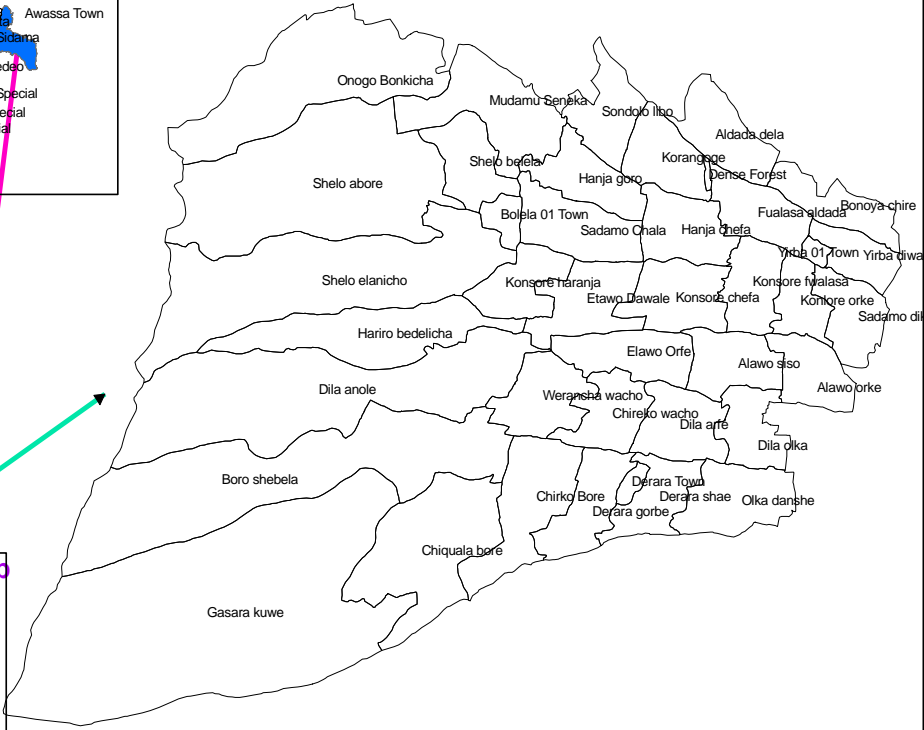
Result

Historical background

Boricha district is one of the districts of Sidama Zone in SNNPR. As the culture and tourism bureau and other areas elders explained that the name Boricha came from the name of the areas village mountain in the district. Boricha was separated from Shebedino district in 2002. Decided to name the separated district's using the name of Boricha village due to its historic background of the war between the Boricha's community and Derg in August 1979, at Boricha village which is located about 25 km south of Zonal capital city Hawassa . Boricha is bordered on south by Loka Abaya, on the west by the Wolyita ,on the north west by Oromia Region ,on the northeast by Hawassa Zuria, on the east by Shebedino District and on the southeast by Dale District .



Boricha district Map



Demographic information

The total population of a district in 2014 was estimated to be 314309. From the total population 157689 male and 156620 female. Among the total population, 94.3% (296,478) reside in rural areas and 5.7% (17,920) reside in urban kebeles. The Sidama is the dominant ethnics in the district. The majority of inhabitants were protestant with 77.9% of the population reporting that belief, 8.94 were catholic, 8.22% were Musilim, 1.81% observed traditional religions, and 1.14% practiced Ethiopian Orthodox Christianity based on the 2007 Census conducted by the CSA.

Productivity and income

The main income of the district is from agricultural. Total land of the district is 61793.18 hectares out of the total land 44613.34 hectares cultivated land, 30564.53 grazing land, 4318.38 hectares community settlement, 6059.44 hectares degraded land, 3142.6 hectares forest land, 14.98 hector water body and 75hectars other type. The agricultural density of the district was 72% hectares of the total land in 2014. In the *Meher* season of 2014, from 12980 hectares of cultivated land 8980 quintals of maize and haricot bean yield were produced and 27000 tone sweet potato. The major annual crops grown in the district are cereals like Maize, Haricot bean, inset, potato, coffee, chat. The average monthly or yearly income of individual in the district is not known.

Education

There are currently three governmental kindergartens, 54 primary schools (11, 1st cycle (1-4); and 43, 2nd cycle (5-8)), five secondary school (9-10) and one preparatory (11-12) in Boricha district. There are no governmental or non-governmental colleges. There are 1014 teachers in Boricha district 863 are male teachers and 151 are females. 826 primary, 150 secondary schools and 48 preparatory teachers in the district. The dropout rate in year 2014 was 643(0.9%) and the dropout rate was due to acute drinking water shortage at school, engagement of students in fetching water and health problem.

Table 4.1.7 No of enrolled student and their teachers by sex in Boriccha district

Types of school		Number of students			Number of teachers			Remark
		male	female	total	male	Female	Total	
Kindergarten								
Primary schools	1-4	23590	23311	46901	480	75	555	
	5-8	11005	9408	20503	229	42	271	
Secondary schools	9-10	1998	1468	3466	125	25	150	
Preparatory		147	159	306	34	14	48	

Facility and infrastructure

Boricha district has all-weather road, for an average road density of 95 kilometers per 1000 square kilometers. There is a mobile network working in all kebeles and towns of Boricha district. There are land lines in urban kebeles. In this district, seven rural kebeles and three towns have supplied with electric power. There is one branch of Commercial Bank of Ethiopia is found in Yirba town.

District Health system

Organization of district health office

Health sector reform - health reforms have intensified through the application of Business Process Reengineering (BPR), leading to a set of new approaches including benchmarking best practices, designing new processes, revising organizational structures and a selection of key five technical teams and two supportive teams. These technical teams are planning and supervision, training and administration, communicable disease control, family health and health extension workers and the health services quality regulation teams. The two supportive teams at district health office are secretary and recording and documentation. The BPR has been progressively implemented at all levels followed by changes in staff deployment, specific job assignments and the recruitment of new staff(1)

Health service and health facility

Regarding health facilities, there are eleven functional health centers, thirty-nine health posts, eleven governmental drug store, three private drug store, nine rural drug venders, ten small clinics, one medium clinic and one district hospital under construction. All the health centers were giving both inpatient and outpatient services. The health service coverage of the district is 75% by health center and 100% by health post. From the whole health facility all health posts and seven health centers have no water supply.

Table 4.1.8 Health facilities infrastructures, Boricha District, Sidama Zone, SNNPR, 2014

Facility type	Total number of health facility in the district	No. of facilities with				Remark
		Water supply	Electricity Power	Telecommunication Service	Road transportation access to district town	
Health Center	11	4	6	3	11	
Health Post	39	0	0	0	39	

Primary health care unit

The recently implemented Business Process Reengineering (BPR) of the health sector has introduced a three-tier health care delivery system: level one is a district health system comprised of a primary hospital (to cover 60,000-100,000 people), health centers (1/15,000-25,000 population) and their satellite Health Posts (1/3,000-5,000 population) connected to each other by a referral system. The primary hospital, health centre and health posts form a Primary Health Care Unit (PHCU). The primary health care unit system was designed by the Ministry of Health to enhance the linkage between health centers and health posts. In this system, all health center staffs are expected to technically support the health posts under their catchment. According to the principle of primary health care unit, one health center should included at least five satellite health posts under it based on the availability of health center in the district(2).

Table4.1. 9 List of health facilities with their respective catchment health posts

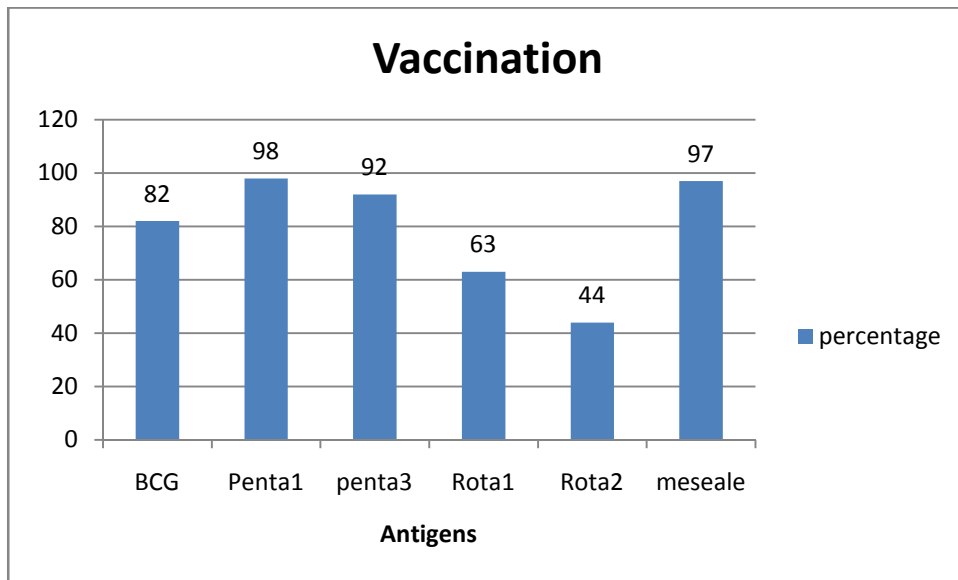
SN	Health centers	No of Health posts supported by Catchment HC	Remarks
1	Yirba	4	
2	Darara	4	
3	Dila Olka	4	
4	Worancha Wacho	4	
5	Konsore Chafa	3	
6	Balela	5	
7	Shamana Godo	4	
8	Yirba Gangeso	3	
9	Fulasa Aldada	4	
10	Dila Anole	2	
11	Gasarakuwe	2	
Total			

Health indicators and vital statistics

Health indicators and vital statistics are important to evaluate the performance of health activities and to set policies. The key role played by indicators in Monitoring and Evaluation (M&E) is clearly laid out in the Health Sector Development Program's (HSDPIII) strategic plan. The key elements for a successful program management and implementation are the designing of a program built on a hierarchy of objectives, targets, activities and measurable indicators, The agreed indicators are the most important management tools for monitoring, review and evaluation purposes. Indicators are always directly linked to the objective setting of a program. Unfortunately the district is missing data for certain statistics including IMR, MMR, NMR, PRM, Under Five Mortality Rate, and Crude Death Rate(3).

Table 4.1.4 Population and Vital statistics in Boricha District, Sidama Zone, SNNPR, 2014

SN	Indicators	Numbers	%	Remarks
1	Total population	314309	100	
2	Male	157689	50.17	
3	Female	156620	49.83	
4	Urban	17,915.6	5.7	
5	Rural	296,393.4	94.3	
6	Total live births			
7	Under 1 years old	18967	3.19	
8	Under 5 years old	4779	15.61	
9	Women in reproductive age	7131	23.30	
10	Estimated pregnancy	1059	3.46	
11	Estimated delivery	1059	3.43	
12	Non pregnant woman	6051	19.84	
13	IMR/1000			
14	Neonatal Mortality Rate			
15	Under 5 Mortality Rate			
16	Maternal Mortality Rate			
17	Crude Birth Rate/1,000			
18	Crude Death rate			



Type	Spring	Hand dag well	Shallow well	Deep well	Protected (%)	functional (%)	Total (safe water supply) in%
No	0	68	2	4	100	81	26.8

Boricha district is one of the most affected districts by drought and wide spread water shortage. Total safe water supply of the district is only 26.8%. From the total water source 12 hand dug well and two shallow well are not functional.

Latrine coverage and Utilization

Latrine coverage of the district is 95% and its utilization is 72%. Twenty kebeles are in the district is free from open defecation and other 19 kebeles of the district are on progress to become open defecation free. All schools in the district were with functional latrines but, there were no school hygiene, hand washing facility with soap and water, also there were only two schools with water supply. In active WASH committee at school level

Table 4.1.6 Top five cause of under five outpatients visit in Boricha Districti, Sidama zone 2014

SN	Type of disease	Number of cases	Percent (%)
1	Pneumonia	3104	37.7
2	Diarrhea	2779	33.7
3	Malaria	1336	16.2
4	AFI	755	9.4
5	Skin infection	265	3
Total		8239	100

Table 4.1.7 Top ten cause of adult outpatient department visit in Boricha Districti, Sidama zone 2014

SN	Type of disease	Number of cases	Percent(%)
1	AFI	3802	18
2	Trauma	2863	13.6
3	Intestinal parasite	2639	13
4	Typhoid fever	2627	12.5
5	Malaria	2612	12.4
6	Pneumonia	2104	10
7	Diarrhea	1695	8
8	UTI	1424	6.7
9	URTI	720	3.4
10	Gastritis	523	2.4
	Total	21009	100

Endemic disease

Malaria

In this district, all kebeles are malarious with an at-risk population of 314309, all households in the district were supplied with ITNs (i.e. 105% coverage). Indoor residual spray took place in 22 prioritized kebeles and 30,252 households covered in 2014 with deltamethrin. A total of 5415 cases of malaria were found but no deaths were reported in 2014 in the district. During the same year, shortage of malaria supplies such as Coartem and RDT were not reported in the district. There were problems on quality of reports.

Tuberculosis and Leprosy

A total of 862 tuberculosis cases (all forms of tuberculosis) were reported from health facilities to the district in 2014. From the total all forms of TB cases, 139 were pulmonary tuberculosis (PTB) negative, 566 PTB positive and 236 extra PTB. The TB detection rate of the district was 66% with 97% of TB cure rate and 97% of TB treatment success rate. There was 8 TB defaulter and 11 (2.7%) deaths on TB treatment in the 2014. There is no any leprosy case in the district.

HIV AIDS

In this district, 32,169 people were screened for HIV/AIDS in 2014. Among these clients, 19(0.06%) of them were confirmed positive. The prevalence of HIV/AIDS is 0.06%. There are 129 People Living with HIV/AIDS (PLWHAs) in the district. Among the 19 new cases, all people started ART service are given in the district.

Severe acute malnutrition

Boricha is one of the most food and nutrition insecure district of Sidama zone. Severe acute malnutrition is a major public health problem in the district. There are OTP in all (39) health post level and 5 SC site in the district in 2014. There were 197 OTP cases at Beginning of the year and 1352 new admissions were on OTP in 2014 and 1349 cured and discharged from the program 19 cases were referred to a health facility/ hospital for medical reasons, 4 cases were defaulter and there were 2 deaths in 2014. There were 7 SC case admission at beginning of the

year and 286 new admission were in the district. 245 cured and discharged from the program 38 cases were referred to a hospital for medical reasons,1 cases were defaulter and there were 2 deaths in 2014 There were also Therapeutic Supplementary Feeding (TSF),CHD and Community Based Nutrition (CBN) programs working on nutritional activities in the district .

Outbreak and disaster situation

In this district, no outbreak or disaster situations have happened within the last three years.

Budget allocation for district Health office

In 2014, 316,733 ETB was allocated for the district health office. Of this total budget, the district had allocated 82% for salary and 18% for running different routine activities.

Human resource

In this district, 24 Health officers, 123 all types of nurses ,23 Pharmacy technicians ,5 Environmental health ,21 laboratory technicians and 80 Health Extension Workers and 130 supportive staff work in the district health office and different governmental health institutions. There were no physicians due to absence of hospitals in the district.

Discussion

The leading cause of adult outpatient visit in the district was AFI which accounts 18% of the total causes of visits. Trauma and intestinal parasites were also other leading causes of adult outpatient visits next to AFI. Pneumonia was the leading cause of under-five outpatient visit in the district. Diarrhea disease was also found to be the major health problem of under-five children of the district next to pneumonia. Increasing access to improved drinking water is one of the Millennium Development Goals that Ethiopia and other nations worldwide have adopted (4) More than half of the households in Ethiopia (57%) have access to an improved source of drinking water, with a much higher proportion among urban households (94 percent) than among rural households (46%)(5),but the district water coverage was very low which accounts only 26.8%. Due to wide spread water shortage of the district, there were also large number of un functional water source and low coverage of available latrine utilization. Additionally, nonexistence of school hygiene hand washing facility with soap and water were common problems. This may have contributed to the higher rate of intestinal parasite on adult, diarrheal disease and skin infection on under-five children.

The 2011-2015 National strategic plan will focus on sustained control and moving towards malaria elimination through an integrated community health approach. One of the major malaria prevention and control strategies in Ethiopia is selective vector control including the use of ITNs(6). The use of ITN has become a leading strategy in malaria prevention and the major contributor for the reduction of malaria morbidity and mortality(7). Despite of the high ITNs coverage and IRS program in the district, Malaria is still remaining to be a leading problem on adult and under five children. Sever acute malnutrition is also other major public health problem in the district.

Delivery attended by skilled health personnel was low which account 37% of the total deliveries attended in the health facility. Postnatal care was not given based on its protocol for example the visit schedules with in 24 hour, third day and on the 7th day were not attended accordingly.

Conclusion

Pneumonia contradict with the district PCV(98%) vaccination coverage, EPI data should be checked and existing prevention mechanisms in order to solve under-five problems should be revised and appropriately practiced to tackle pneumonia . Additionally diarrhea, skin infection in under five children and intestinal parasite in adult, were reaming to be the common health problem therefore Water shortage should be solved & also Strengthening School education on hygiene, together with the community. Even though, an increased coverage of ITN in the district, malaria was remaining to be priority diseases in under five children and adult , so that the district ITNs utilization should be monitored. Also AFI were leading causes in adult outpatient visit, specific laboratory diagnosis should be done to isolate the causative agent.

Reference

4.1.1 Federal Democratic Republic of Ethiopia Ministry of Health , Health Sector Development Program IV 2010/11 – 2014/15

4.1.2 Federal Democratic Republic of Ethiopia Ministry of Health Health Sector Development Program IV 2010/11 – 2014/15

4.1.3 Ref Federal Ministry of Health HMIS / M&E Indicator Definitions HMIS / M&E Redesign: Technical Standards: Area 1 version 1.0 HMIS Reform Team May 2007

4.1.4 United Nations General Assembly, 2002.

4.1.5 Ethiopia Mini Demographic and Health Survey 2014

4.1.6 FMOH,NATIONAL MALARIA GUIDELINE(Third Edition),Addis abeba:FMoH.2012;p.31-38.

4.1.7 FMOH,NATIONAL STRATEGIC PLAN FOR MALARIA PREVENTION CONTOROL AND ELIMINATION IN ETOPIA 2011-2015,Addis Abeba:fmoh.2010.

Chapter 5- Scientific Manuscripts for Peer Reviewed Journals

5.1 Malaria Surveillance Data Analysis Report from 2011 - 2015 in SNNPR , Ethiopia

Abstract

Introduction

Globally, an estimated 3.3 billion people are at risk of being infected with malaria and developing disease, and 1.2 billion are at high risk. The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged under 5 years, who account for 78% of all deaths. Surveillance is an on-going systematic collection, analysis, interpretation and dissemination to the users who need it for action and malaria is one of the priority diseases under surveillance which have high epidemic potential. According to the 5 years national strategic plan for malaria prevention control and elimination in Ethiopia with goals 1. By 2015, achieve malaria elimination within specific geographical areas with historically low malaria transmission 2. By 2015, achieve near zero malaria death in the remaining malarious areas of the country. Surveillance is a key component of the overall strategy to move towards elimination. Supporting strategies, such as M&E, HR development and Operational Research will contribute to achieving this Plan's objectives.

Method

Therefore, the disease occurred as an epidemic in different zones in SNNPR. So analysis of malaria surveillance data is very important to see trends of the disease which help to design prevention and control strategies. This study was designed to analysis the Five year (2011-2015) regional malaria database to describe the magnitude and distribution of the disease in the region.

Result and Conclusion

Majority of the cases were reported from Hawassa city next to Hallaba special district, and list malaria cases reported from Kefa zone and Yeme special districts. High malaria confirmed cases were reported in 2012 however the prevalence was decreasing tremendously until 2015 and it reduced by 4 times compared to the 2012 data. This finding concise with the finding Malaria incidence rates decline, globally including Africa region, in the past decade, by 30% globally between 2000 and 2013 (1,2). However, the actual downward trend was slower between 2011 and 2013, partly due to a reduced rate of increase in ITN coverage. Spatial distribution varied

from areas to areas throughout the 5 years period in the region. However, the trend and the spatial distribution of the data can be important input to do further study, and also to evaluate the intervention program related malaria and take positive measures.

Introduction

Malaria incidence rates are estimated to have fallen, in the past decade, by 30% globally between 2000 and 2013, while estimated mortality rates fell by 47% globally and by 54 % in the WHO African Region (1,2). After a slow start, the pace of decline in malaria incidence and mortality rates accelerated from 2005. For mortality, the rate of decline from 2005 to 2010 was fast enough to attain a 75% reduction over 15 years. However, the actual downward trend was slower between 2011 and 2013, partly due to a reduced rate of increase in ITN coverage. If annual rates of decline that have occurred over the past 13 years are sustained, then by 2015, global malaria case incidence is projected to decrease by 35% and malaria mortality rates by 55%.

. The burden is heaviest in the WHO African Region, where an estimated 90% of all malaria deaths occur, and in children aged under 5 years, who account for 78% of all deaths (3).

Besides the high incidence rate of malaria, its seasonal variation in Ethiopia make the problem as a public health problem. Malaria transmission exhibits a seasonal and unstable pattern in Ethiopia, with transmission varying with altitude and rainfall. The major malaria transmission season in the country is from September to December, following the main rainy season from June/July to September. There is a shorter transmission season from April to May following the shorter rainy season in some parts of the country. Currently, areas <2,000 meters of altitude are considered malarious (4).

According to the world malaria report, fifty-eight countries are projected to achieve >75% reductions in malaria mortality rates by 2015. Progress in reducing incidence and mortality rates has been faster in countries with smaller estimated numbers of malaria cases and deaths. Not all of the cases and deaths averted can be attributed to malaria interventions. Some progress is likely to be related to increased urbanization and overall economic development, which lead to improvements in housing and nutrition (5).

However, the target of Millennium Development Goal (MDG) 6 “to have halted and begun to reverse the incidence of malaria” (Target 6C) has been achieved in the coverage and financing of malaria control programs between 2000 and 2015. The number of malaria cases globally fell from an estimated 262 million in 2000 to 214 million in 2015, a decline of 18%. Most cases in

2015 are estimated to have occurred in the WHO African Region (88%), followed by the WHO South-East Asia Region (10%) and the WHO Eastern Mediterranean Region (2%) (6).

In sub-Saharan Africa, it is estimated that malaria control interventions accounted for 70% of the 943 million fewer malaria cases occurring between 2001 and 2015, averting 663 million malaria cases (range: 542–753 million). Of the 663 million cases averted due to malaria control interventions, it is estimated that 69% were averted due to use of insecticide-treated mosquito nets (ITNs) (UI: 63–73%), 21% due to artemisinin-based combination therapy (ACT) (UI: 17–29%) and 10% due to indoor residual spraying (IRS) (UI: 6–14%) (6).

Accurate assessments of the levels and time trends in malaria burden are crucial for the assessment of progress towards goals and the focusing of future efforts. Less analysis has been done for time trends; only the World Malaria Reports for 2010⁴ and 2011²¹ produce estimates over time with both suggesting reductions in malaria mortality compared with the previous decade. The NSP aims to achieve a high quality, broadly based malaria infection detection, investigation and response ‘Surveillance System’ to further reduce malaria transmission and improve the detection and timely response to malaria epidemics. Ethiopia was one of the first countries to embrace the SUFI concept for malaria control. Since 2005, over 20 million long-lasting insecticidal nets have been delivered to around 10 million homes in malarious areas of Ethiopia, resulting in the highest reported household ownership of ITNs in Africa. In addition, the indoor residual spraying program has been scaled-up. Treatment with Artemisinin-based combination therapy has been rolled out nationwide through health facilities including through the Health Extension Worker network, alongside improved diagnosis with Rapid Diagnostic Tests.

As a result of the huge scale-up in malaria prevention and treatment that has occurred since 2005, health facilities are reporting sustained reductions in both cases and malaria-related deaths, even during the height of the transmission season. These scale up efforts have spillover effects towards goals of broadly reducing both maternal and child mortality. In the coming years, Ethiopia will need to build on and sustain the tremendous progress that has already been made, ensure that the quality of the services delivered is high, and will need to further strengthen some key areas such as indoor residual spraying, diagnosis, rational drug use and surveillance, including epidemic surveillance and response.

The 2011-2015 NSP will focus on sustained control and moving towards malaria elimination through an integrated community health approach, especially in areas of unstable malaria transmission, building on SUFI achieved by the 2005-2010 strategic plan. The 2011-2015 NSP will achieve these ambitious goals by integrating specific interventions within the overall health system and relying on strong community involvement through the HEP. Surveillance is a key component of the overall strategy to move towards elimination. Supporting strategies, such as M&E, HR development and Operational Research will contribute to achieving this Plan's objectives (7).

Method

Descriptive cross sectional study was conducted from April 10 -25, 2016 in Southern nations Nationalities and Peoples Region public health emergency management unit weekly reportable surveillance database reported in 2011-2015 were included in the analysis.

Operational definition

Case definition Any person with fever or fever with headache, back pain, chills, rigor, sweating, muscle pain, nausea and vomiting or suspected case confirmed by RDT

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

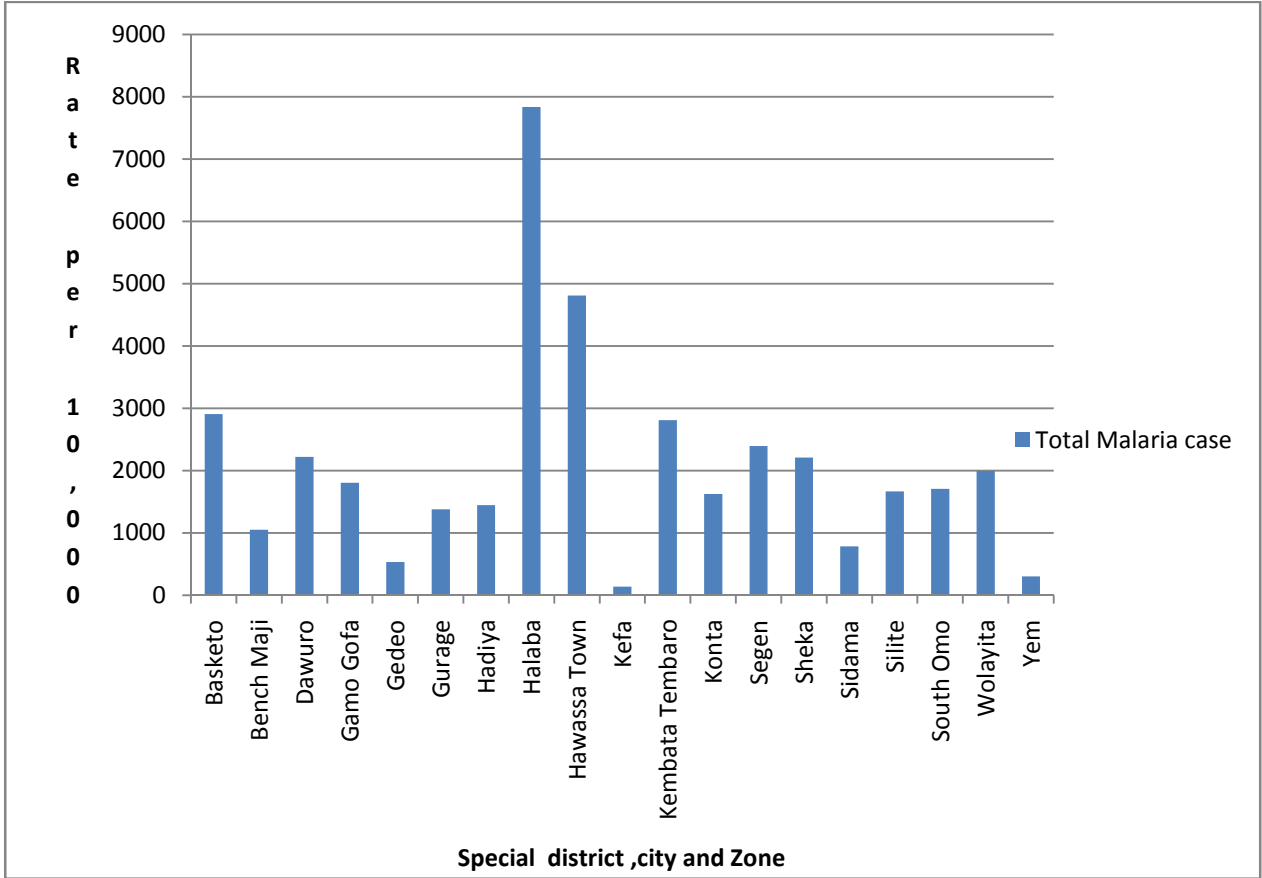
Confirmed case definition: A suspect case confirmed by microscopy or RDT for plasmodium parasite.

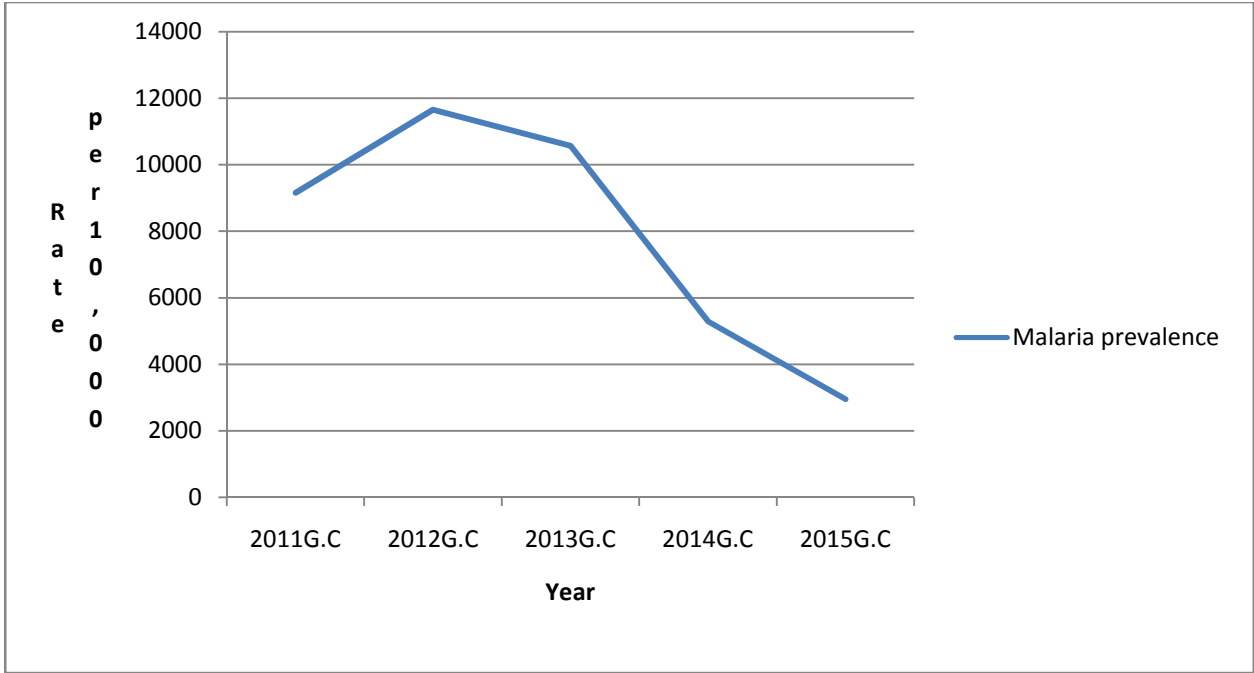
Data collection and procedure

A five years surveillance data were obtained from SNNPR Health bureau of PHEM core process .

Data processing and analysis

After we checked the data for its completeness and cleanness, Microsoft Office Excel 2010 and arc map was used to organize and analyze the data appropriately





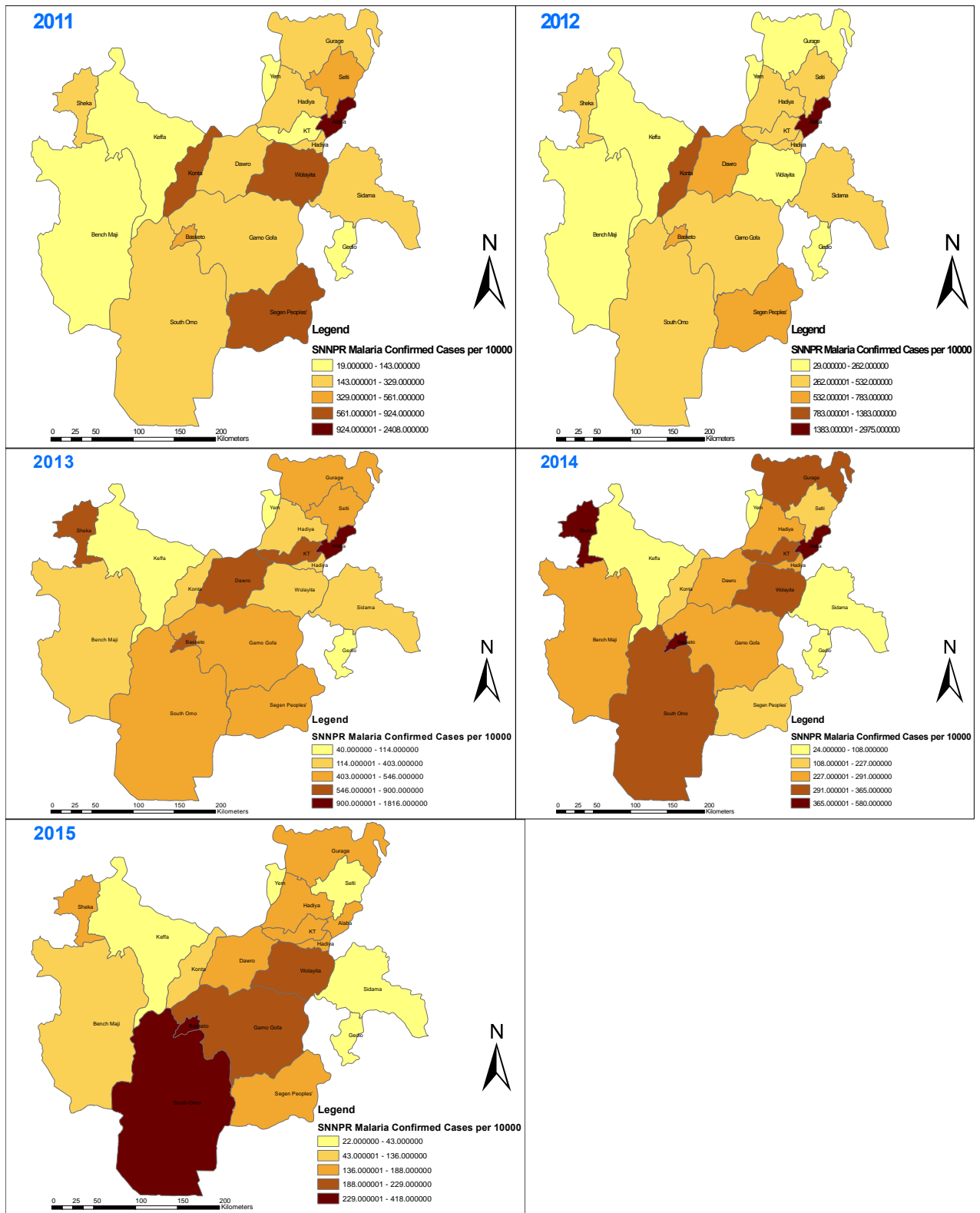


Figure 5.1.3 - Annual malaria case at Zonal and special district level in SNNPR, Ethiopia, 2011-2015

Discussion

Majority of the cases were reported from Hawassa city next to Hallaba special district, and list malaria cases reported from Kefa zone and Yeme special districts. High malaria confirmed cases were reported in 2012 however the prevalence was decreasing tremendously until 2015 and it reduced by 4 times compared to the 2012 data. This finding concise with the finding Malaria incidence rates decline, globally including Africa region, in the past decade, by 30% globally between 2000 and 2013 (1,2). However, the actual downward trend was slower between 2011 and 2013, partly due to a reduced rate of increase in ITN coverage.

Spatial distribution varied from areas to areas throughout the 5 years period in the region. Such as stable and low malaria confirmed case distribution observed in three parts of the region. However the other part of the SNNPR region showed either decline or increment in malaria confirmed cases in the past five years. Again irregular distribution was observed in some of the zones in the five years report. According to the 5 years national strategic plan for malaria prevention control and elimination in Ethiopia with goals of achieve malaria elimination within specific geographical areas with historically low malaria transmission, and achieve near zero malaria death in the remaining malarious areas of the country. This variation throughout the SNNPR region in the past five years could be due to ITNs distribution and utilization, indoor residual spraying programme haven't been implemented according to the 5 years national strategic plan (7).

The limitation of the finding deserve to be mentioned that the data was not complete to do the analysis. Such as age specific data was not complete in the surveillance data. Therefore, it was difficult to present the prevalence of malaria confirmed case for under five children in the study region. Similarly, pregnant mothers' malaria confirmed case data was not available. However, the trend and the spatial distribution of the data can be important input to do further study, and also to evaluate the intervention program related malaria and take positive measures.

Conclusion and recommendation

Generally malaria incidence was decline in study region, concise with globally& Africa region finding, however the actual down ward trend was slower for the first three years of period and this might be partly due to poor ITNs coverage and utilization. In some parts of the region increment in malaria cases was identified in five years period. Additionally irregular distribution were observed in some parts of the region. Considering the Ethiopian NSP to eliminate malaria and to achieve near zero malaria death by 2015, the irregular distribution and increment in malaria cases in this region might be an indication for not achieving the strategic plan. Therefore, SNNPR should revise their intervention approach specially in the areas where high increment and irregularity observed such as South Omo zone , Gamo Gofa zone, Hadiya zone , Basketo special district, Sheka, Benchi Maji, Wolayita, Kenbata, Gurage zones.

Reference

5.1.1 Estimated Malaria Case Incidence Rate, 2000–2013 And B) Estimated Malaria Mortality Rate, 2000–2013

5.1.2 World Malaria Report 2014. Geneva: World Health Organization; 2014

5.1.3 World Malaria Report 2014

5.1.4 National Strategic Plan For Malaria Prevention Control And Elimination In Ethiopia 2011 – 2015

5.1.5 World Malaria Report Summary 2014

5.1.6 World Malaria Report 2015 Xi

5.1.7 National Strategic Plan For Malaria Prevention Control And Elimination In Ethiopia 2011 – 2015.

Chapter 6-Abstract For Scientific Presentation

6.1 Epidemiological a retrospective Analysis of Injuries following the Hawassa Earthquake, Hawassa ,Sidama Zone, SNNPR, January 2016

Abstract

Introduction

Earthquakes were responsible for an estimated 1.87 million deaths in the 20th century with an average of 2,052 fatalities per event affecting humans between 1990 and 2010. Earthquakes result from sudden energy releases in the earth's crust, which create seismic waves that result in ground shaking. Millions of earthquakes occur each year, though only a small proportion is strong enough to be felt and even fewer cause damage. The two major rift valley systems of the East African Rift are the Gregory Rift and the Western Rift. Ethiopia is one of the countries located in the great rift valley system; Hawassa city is within this rift valley system. Hawassa is a city located in southern part of Ethiopia. An earthquake that registered 4.3 on the Richter scale occurred at 9:30pm on January 24,2016 in Hawassa city. which was followed by consecutive aftershock till January 29,2016. The aim of this study was to identify and describe injury profiles, and characterize injuries sustained in earthquakes. Additionally, this study aimed to suggest and recommend the health institutions on preparedness in future earthquake-related injuries and other similar distractive disaster condition.

Method

A retrospective investigation was carried in Hawassa Teaching Referral Hospital, Hawassa city, in Sidama Zone SNNPR, Ethiopia. Participants were all admitted patients due to earthquake related injuries between January 24-29,2016. Structured questionnaire were used to interview participants, and checklists were used to collect additional information from the medical records. Epi.Info7 was used for data entry and analysis.

Result

The study finding showed that students were the most injured cases due to the earthquake. Ankle fractures were the most reported injuries which accounts 35.7%. It's also confirmed in the result

that almost all the injuries due to indirect causes that jumping and falling down from first up to fourth building floors.

Conclusion

The injuries were due to the panic and rush out jumps that commonly lead to Ankle fracture. This could happened due to lack of awareness about earthquake and its safety measures. Therefore, increasing public awareness seem mandatory towards the causes, types, prevention and control mechanisms of earth quake related disasters.

Key words: Earthquake, Injuries, Fractures

6.2 Measles outbreak investigation in Hull District, Sidama Zone, SNNPR February 8, 2015

Abstract

Introduction: Measles outbreak is still a public health problem in different Ethiopian regions. Hulla district reported a measles out-break in February, 2015 to South Region Nation and Nationality health office, despite vaccination coverage of the district 99% in 2013, 105% in 2014 and 96% six month coverage of 2015. Therefore, I conducted the research to assess the magnitude and determine contributing factors for the occurrence of measles outbreak.

Method: Descriptive epidemiologic study, A 1:1 unmatched case control with total of 50 cases and 50 control and qualitative study was conducted. For the descriptive, a total of 307 cases were participated based on the measles line listing records. Discussed, interviewed and reviewed with key informants about the cold chain management, EPI coverage, reporting system and EPI data quality of the Hulla district.

Results: Majority of the cases, 184 (60%), were between 5-14 years of children. The attack rate became 452 per 100,000 populations with zero case fatality rate. The vaccination statuses from the whole cases were, 44 (14%) were unknown case, 14(5%) were two dose, 53(17%) one dose and 196(64%) zero dose. Contact history with sick and travel history two weeks prior to the onset of symptoms were significantly associated with Odds ratio of 126(15.8, 1002), 16(3.5, 73) respectively.

Conclusion: In order to reach the age group of 5-14 years, providing a second opportunity for measles vaccination through supplementary immunization seems important. Additionally, early notification and response, improving routine vaccination, strength surveillance system in all levels could be an ideal approach to reduce measles outbreak and its complication.

Key word: Measles outbreak investigation in Hulla district

Chapter 7-Narrative Summary of Disaster Situation visited

7.1 Epidemiological a retrospective Analysis of Injuries following the Hawassa Earthquake, Hawassa ,Sidama Zone, SNNPR, January 2016

ABSTRACT

Introduction

Earthquakes were responsible for an estimated 1.87 million deaths in the 20th century with an average of 2,052 fatalities per event affecting humans between 1990 and 2010. Earthquakes result from sudden energy releases in the earth's crust, which create seismic waves that result in ground shaking. Millions of earthquakes occur each year, though only a small proportion is strong enough to be felt and even fewer cause damage. The two major rift valley systems of the East African Rift are the Gregory Rift and the Western Rift. Ethiopia is one of the countries located in the great rift valley system; Hawassa city is within this rift valley system. Hawassa is a city located in southern part of Ethiopia. An earthquake that registered 4.3 on the Richter scale occurred at 9:30pm on January 24,2016 in Hawassa city. which was followed by consecutive aftershock till January 29,2016. The aim of this study was to identify and describe injury profiles, and characterize injuries sustained in earthquakes. Additionally, this study aimed to suggest and recommend the health institutions on preparedness in future earthquake-related injuries and other similar distractive disaster condition.

Method

A retrospective investigation was carried in Hawassa Teaching Referral Hospital, Hawassa city, in Sidama Zone SNNPR, Ethiopia. Participants were all admitted patients due to earthquake related injuries between January 24-29,2016. Structured questionnaires were used to interview participants, and checklists were used to collect additional information from the medical records. Epi.Info7 was used for data entry and analysis.

Result

The study finding showed that students were the most injured cases due to the earthquake. Ankle fractures were the most reported injuries which accounts 35.7%. It's also confirmed in the result that almost all the injuries due to indirect causes that jumping and falling down from first up to fourth building floors.

Conclusion

The injuries were due to the panic and rush out jumps that commonly lead to Ankle fracture. This could happened due to lack of awareness about earthquake and its safety measures. Therefore, increasing public awareness seem mandatory towards the causes, types, prevention and control mechanisms of earth quake related disasters.

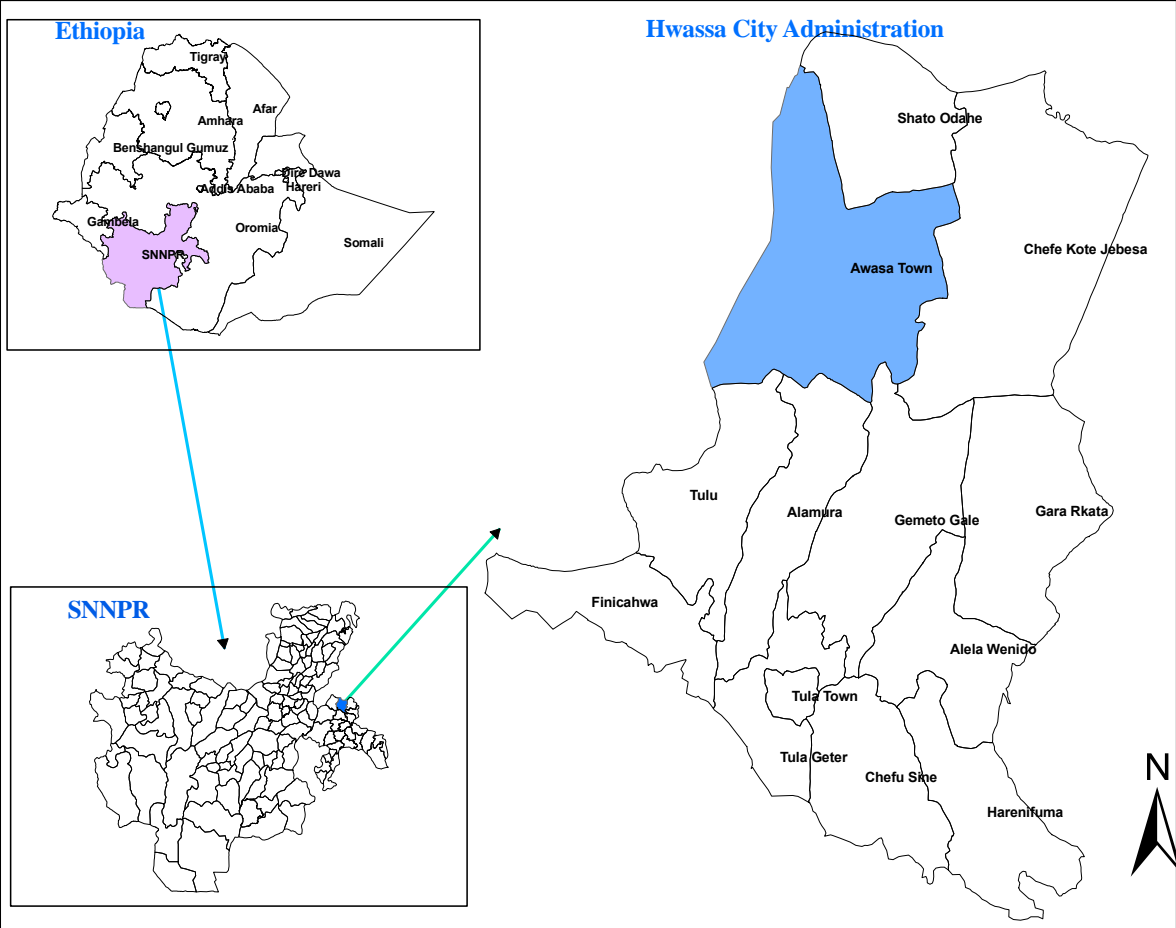
Key words: Earthquake, Injuries, Fractures

Introduction

Earthquakes were responsible for an estimated 1.87 million deaths in the 20th century with an average of 2,052 fatalities per event affecting humans between 1990 and 2010. The magnitude 8.9 Japan earthquake and resulting tsunami in March 2011 was responsible for more than 28,000 deaths; in comparison, the smaller magnitude 7.0 earthquake occurring in Haiti in January 2010 resulted in an estimated 222,500 fatalities (1,2). Earthquakes result from sudden energy releases in the earth's crust, which create seismic waves that result in ground shaking. Earthquakes are usually caused by slippage on a fault due to built up friction between tectonic plates but can also be caused by volcanic eruptions or manmade explosions(3). Millions of earthquakes occur each year, though only a small proportion is strong enough to be felt and even fewer cause damage. Earthquakes occur at focal depths of 700 km to just under the earth's surface, and the strength of shaking diminishes with increasing distance from the earthquake's source (4). Earthquake magnitude measures the energy released by an earthquake and is described by the moment magnitude scale, which is a logarithmic scale, so that a magnitude 5 earthquake is about 10 times less powerful than a 6, and 100 times less than a magnitude 7. A magnitude 2.5 earthquake is not generally felt by humans, whereas earthquakes with magnitude >7.0 may cause widespread destruction (5).The two major rift valley systems of the East African Rift are the Gregory Rift and the Western Rift. These rift valleys are dotted by volcanoes: Erta Ale, Ethiopia; Mount Kenya, Kenya (an extinct stratovolcano); Ol Doinyo Lengai, Tanzania; Mount Kilimanjaro, Tanzania (a dormant stratovolcano); and Mount Nyiragongo, Democratic Republic of Congo(6).The great rift valley system is known to be the most volcanically active in Ethiopia; Hawassa city is within this rift valley system. Hawassa is a city located in southern part of Ethiopia. An earthquake that registered 4.3 on the Richter scale occurred at 9:30pm on January 24,2016 in Hawassa city. which was followed by consecutive aftershock till January 29,2016. It was also felt in the nearby towns such as Yirgalem, Halaba,Shahsemene.

The aim of this study was to identify and describe injury profiles such as the magnitude, types of earthquake injuries, injury severity, and Surgical procedure done among patients who visited and admitted to Hawassa Teaching Referral Hospital . By identifying these variables , SNNPR State Health Bureau, PHEM department ,Hawassa Teaching Referral Hospital and other health institutions will be more aware about the characteristics of injuries sustained in earthquakes.

Additionally, this study will come up with specific suggestions and recommendations to the health institutions on preparedness and readiness to implement medical relief and medical rescue better in future earthquake-related injuries and other similar distractive disaster condition.



Study design

A retrospective clinical investigation was carried in Hawassa Teaching Referral Hospital, Hawassa city, in Sidama Zone SNNPR. Participants were all admitted patients due to earthquake related injuries between January 24,2016 and January 29,2016. Additionally, secondary data was also obtained from the discharge reports of patients treated from earthquake related injuries in the present study.

Data collection

After excluding 75 hospital visited cases and 5 referred cases due to missing data for key variables (*age , sex, Cause of injury, Main shock or aftershock injury ,mechanism of injury ,body region injured, surgical procedure for injured case done,)or contact information (Phone number, addresses)*), I interviewed 14 cases (10 were on admission during the data collection period and four were discharged cases after two days treatment and follow up) who were admitted to Hawassa Teaching Referral Hospital from 24 -29 January due to earthquake-related injuries. Additionally, I reviewed their medical records for more surgical information. Ten of the participant were interviewed in person and the other four discharged participants were interviewed through phone.

Data processing and Analysis

A retrospective analysis was done from data obtained through interview questioner and patient medical record related earthquake injuries. The data was entered to Epi.Info7 for descriptive analysis such as frequency, proportion and ratios.

Operational Definitions

Fracture injury: A break in bone or cartilage. Although usually a result of trauma, a fracture can be the result of an acquired disease of bone, such as osteoporosis, or of abnormal formation of bone in a congenital disease of bone, such as orthogenesisimperfecta ('brittle bone disease').

Soft tissue injury: A Soft tissue injury (STI) is the damage of muscles, ligaments and tendons throughout the body. Common soft tissue injuries usually occur from a sprain, strain, a one-off blow resulting in a contusion or overuse of a particular part of the body.

Plaster of Paris (POP): Any of a group of gypsum cements, essentially hemihydrated calcium sulfate, $\text{CaSO}_4 \cdot \frac{1}{2} \text{H}_2\text{O}$, a white powder that forms a paste when it is mixed with water and then hardens into a solid, used in making casts, molds, and sculpture

The five injury degrees are generally described as below:

Intact on the whole: the trapped is on the whole not injured by damaged buildings; with only slight wound like rub on the skin, etc; but can act normally after being applied ointment. Slightly injured: the trapped has no injury in head, internal organs and main skeleton; with little wound in unimportant part; but can act normally after a short period in hospital.

Moderately injured: the trapped has moderate injuries in head, internal organs and main skeleton; but with some wounds in one or more unimportant parts; needs to be in hospital for a certain period; basically will not be disabled lifelong.

Seriously injured: the trapped has some severe injuries that make him unable to control his own activity including walk; and needs to be in hospital with rescue immediately; in some case, may be disabled lifelong because of too severe injuries or not being rescued timely.

Dying: the trapped has many severe injuries and is in a state of unconsciousness; it is impossible that he could be rescued through operation.

Ethical issues

Ethical clearance and supportive letter were written to Hawassa Teaching Referral Hospital from the SNNP Regional Health Bureau to conduct an investigation. Again the letter was approved by different participating hospital departments. Informed consent was obtained from all admitted patients and verbal consent was obtained from discharged patients through phone to interview and to review their medical records.

Result

The effects of this earthquake caused more than 150 cases panicked, injured and visited to referral hospital. Out of the total injured cases, more than three fourth were students in Hawassa University Main campus, Technology Campus and Referral Teaching Hospital Campus. injured cases. About 94 cases were officially registered on medical recorded and reported as injured but there was no any death report. However 14 cases only were interviewed for further analysis.

Socio demographic data

A total of 94 cases were recorded in Emergency department at Hawassa Referral Teaching Hospital. Out of those patients, 75 cases were discharged immediately after treatment of minor injury and the rest 19 cases were with severe injuries and were admitted. From the total 19 severely injured patients, three were self referral and two were referred to Addis Ababa for further investigation and management, and four cases were discharged after two days hospital stay for treatment and follow up (before the data collection period). The rest 10 cases were admitted for treatment and follow up during the data collection period. Out of the 14 admitted injured cases, 13(93%) were male and 1(7%) were female. From the total cases 8(57%) students were from Main campus, 3(21.4%) were from referral campus and 3(21.4%) were from Techno campus. The mean age of the hospitalized patients were 21 years of age.

Type of injury

Regarding the type of injury, 6(43%) presented with multiple injury and 8(57%) with single injury. By body location of fracture, Ankle foot fracture were the most common injury and it accounts 5(35.7%), the rest Knee and lower leg, and Shoulder upper arm and upper extremity account 3(21.4%) and 2(14.3%) respectively. The other body locations such as Head, Hip and tight, Thorax, Wrist and hand, each accounts 1(7.1%). Specific to the bone location, Ankle fracture is the major fracture and it accounts 5(35.7%), Tibia/Fibula fracture 3(21%), and other bone fractures such as Clavicle, Femur, Humorous, Radius/Ulnar, Vertebral Column and Wrist, each accounts 1(7.1%). From the total of fracture cases were diagnosed, Closed injury accounts 8(57%), Fracture and soft tissue injury accounts 5(35%), and Soft Tissue Injury (STI) accounts 1(7%). From the total injured cases 10(71%) severely injured and 4(29%) moderately injured.

Injury mechanism

Injury mechanism of fractured cases were 14(100 %) of case jumped from different floor and fall down .All of the cases were on treatment and on follow up. Half of them, 7(50%) of injury occur at the time of main shock and 7(50%) at the time of aftershock. All of the cases were indoor at the time of main shock and aftershock events that 13(93%) students were at campus dormitory and 1(7%) at library studying area. More of injury occurred at night time 8(57%). Half of the injured cases 7(50%) were jumped and fall down from the first floor, 4(28.5%) cases from the second floor, 2(14%) from the third floor and 1(7%) from the fourth floor. In general, majority of the injuries 13 (93%) occurred due to indirect cause of the earthquake, and the rest 1(7%) were due to direct causes of the earth quake.

Management

Major and minor surgical procedure were done to the patients with earthquake related. More than half 9(64%) Plaster of Paris (POP) cast procedure was done especially for closed fractures injuries, 2(14%) internal fixation surgical procedure were carried out, and 3(21%) other surgical procedures were done such as debridement, suturing, etc. Additionally, other medical treatment were done for infection prevention and complications such as first aid, oxygen supplementation, antibiotics and other.

Discussion

The study finding showed that students were the most injured cases due to the earthquake. Majority of the cases were panicked and with minor injuries, were sent home after immediate treatment. However, serious cases were admitted and referred for further treatment but no deaths were reported. Ankle fracture were the most reported injuries and this is might be due to the most injury occurred due to jumping and falling from the different floor levels. That campus students panicked and rushed out of their dormitory and library and fractured cases were all of them suddenly jumped from different floor and fall down. It's also confirmed in the result that almost all the injuries due to indirect causes. This all shows that injuries were due to panicking and rush out jumps that commonly lead to Ankle fracture. This could happened due to lack of awareness about earthquake and its safety measures.

Recommendation

Therefore, Mass or public Awareness is mandatory and essential among the community as well as the policy maker about the consequence of earthquake and safety measure so that steps can be taken to mitigate the impact in time. National and local media such as FM radio and TV channels from different region of the country should disseminate on earthquake and on safety measure should be taken at the time of shock collaborating with public health emergency department. Moreover, public awareness increasing health education on causes, types and prevention and control mechanisms and close monitoring of interventions and prevention efforts were recommended Such as stay inside until the shaking stops and it is safe to go outside because most injuries during earthquakes occur when people are hit by falling objects while entering or leaving buildings or jumping from the floor.

However, this study suggested further studies needs to be conducted in order to assesses readiness and preparedness regarding of the disaster situations such as emergency set ups for accommodation and handling devastating emergency condition. In conclusion, lack of awareness about Earthquake and its prevention mechanisms significantly contributed to increased vulnerability of victims.

Limitations

Missing of data for key variables or contact information from the patient cards treated and discharged from Emergency department and referred cases. Additionally incompleteness of medical records. To date, there has been no comprehensive population-based injury national and regional study from earthquakes.

Reference

- 7.1.1 Wisner B, Blaikie P, Cannon T, Davis I.(2008). At Risk: Natural hazards, people's vulnerability and disasters (2nd Edition). New York: Routledge, 275.
- 7.1.2 EM-DAT the International Disaster Database. (2011). Retrieved Mar 3, 2011 and July 28, 2011 from www.emdat.be/
- 7.1.3 US Geological Survey. 1997. "How Earthquakes Happen." Retrieved 12/7/09 at <http://pubs.usgs.gov/gip/earthq1/how.html>
- 7.1.4 US Geological Survey. 2009. "Earthquakes, Faults, Plate Tectonics, Earth Structure: What is the significance of the depth of an earthquake?" Retrieved 12/7/2009 at <http://earthquake.usgs.gov/learn/faq/?faqID=250>
- 7.1.5 Southern California Earthquake Center. 2009. "How are Earthquakes Located and Measured?" Retrieved 12/7/2009 at <http://www.earthquakecountry.info/faq.php>
- 7.1.6 National Geography
- 7.1.7 Medical Efforts and Injury Patterns of Military Hospital Patients Following the 2013 Lushan Earthquake in China: A Retrospective Study

7.2 Belg Health and Nutrition Assessment report of Gurage and Silte Zone July 2015

7.2.1 Belg health and nutrition assessment report of Gurage zone July ,2015

Introduction

Gurage Zone is one of the zone in SNNPR divided into 15 district with a total population estimation in 2007 is 1,631,500 ; 794185 M and 837316 F .Gurage zone is bordered on the south by Hadiya Zone on the west, north and east by Oromiya region. The zone has the health service coverage of 31% by hospital 97% by health center and 100 % by health post. and 3 Hospital, 71 HCs and 411 HPs serving the population in Gurage zone this time. Gurage zone have 98.% of latrine coverage, 60.5 % of water supply . During this assessment period discussion was held with the respective zonal departments (emergency task force) to identify vulnerable district that might need emergency assistance for the upcoming year 2016 in the zone. Zonal Agriculture, water, Health and education departments selected Meskan and MihurAklil district to be visited by the assessment team since they are the most affected district due to adverse weather conditions during the Belg season ,water scarcity, and malnutrition. When it comes to health emergencies, Malaria, AWD, Malnutrition, meningitis and measles are anticipated epidemics so far in the zone. In this Zone, there are 15 malaria endemic district's with an at-risk population of 168,0669, 8 districts with the total population 52,777,58 at risk for AWD, 8 districts with the total population 1,008,639 at risk for malnutrition ,15 districts with the total population 1680669 at risk for meningitis and 5 districts with the total population at risk for meseals. Currently, there is no ongoing outbreak reported in any district's of the zone. There are trained staff on PHEM in all levels of the Zone.

Objectives

- To evaluate the performance of the year 2015 belg rain and its impact on health and Nutrition situation in selected districts in SNNPR
- To identify areas and estimate the size of affected/risk population in need and required resources.

Method

Secondary data review was done on key indicators that impact on livelihoods and an interview using semi-structured questionnaire, briefings/debriefings were held with zonal and district officials to discuss on food security and health information for the season(23 ,June to 7 July 2015)

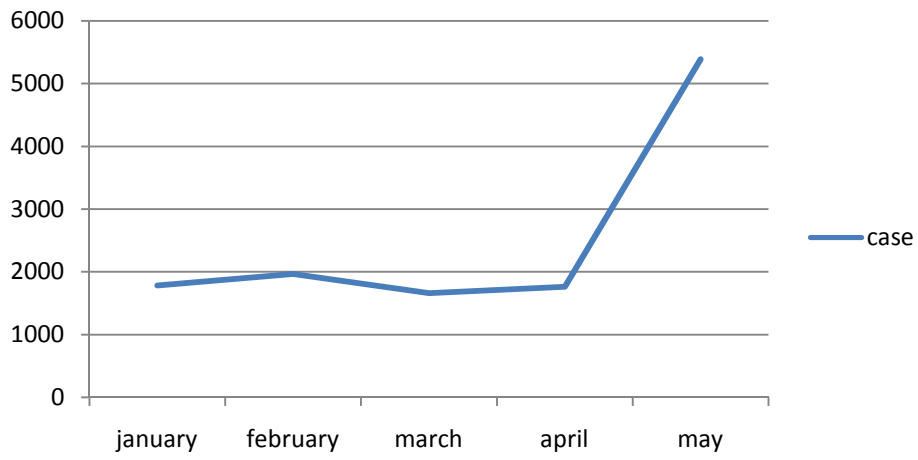
Result

There is established multi sect oral PHEM coordination forum in all assessed districts of Gurage zone. But the forum doesn't meet regularly to monitor Emergency Preparedness and response activities. All district's assessed in Gurage zone have PHE preparedness and response Plan . All districts assessed have emergency response fund to immediately respond during emergencies under districts administration .

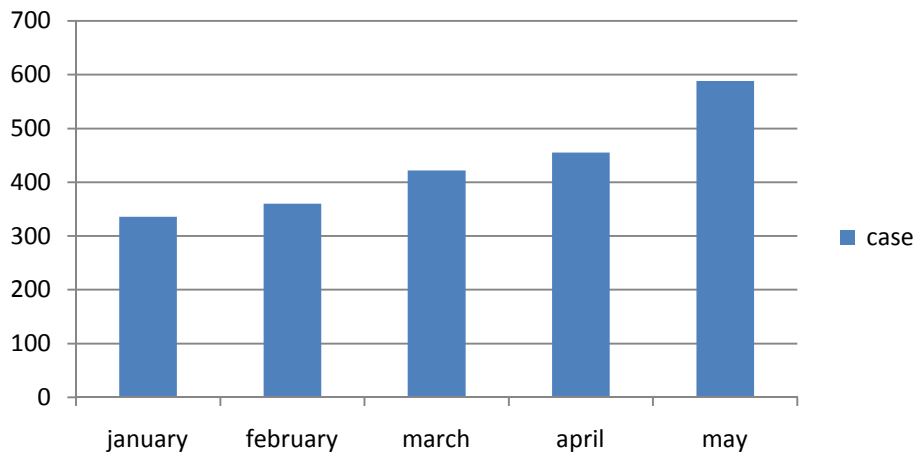
From the morbidity data list top five morbidity cases of under five are malaria, Pneumonia, diarrhea, respiratory tract infection and intestinal parasite. Top five cause of morbidity in adults are malaria, pneumonia, AFI, URI, and trauma. There was no outbreak reported in the previous 3 months and the assessment period in all districts of Gurage zone. This report shows that malaria and Pneumonia are the leading cause of morbidity in both above and below 5 years of age of the population in zone.

LLINs coverage is 76 % in all malaria endemic area and also there are some risk factors for epidemics to occur such as presence of malaria breeding sites and low coverage of Indoor residual spray (IRS).

Malaria cases in Gurage Zone



OTP cases in gurage zone



SC case in Gurage Zone

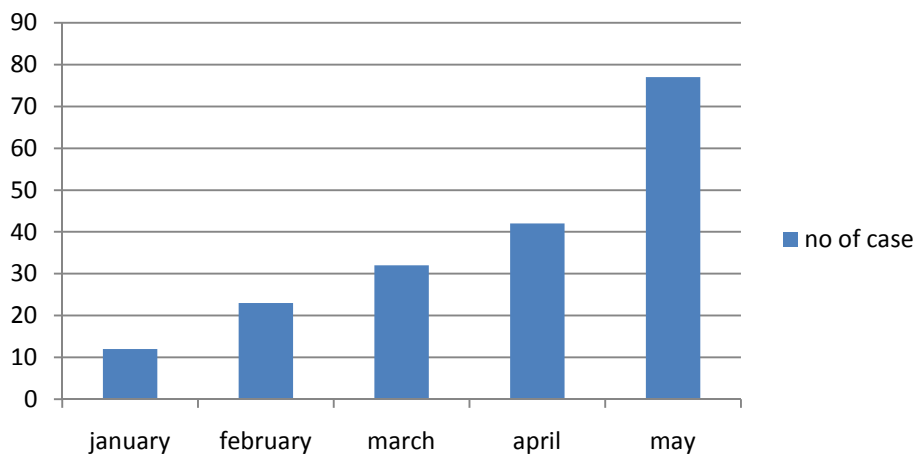
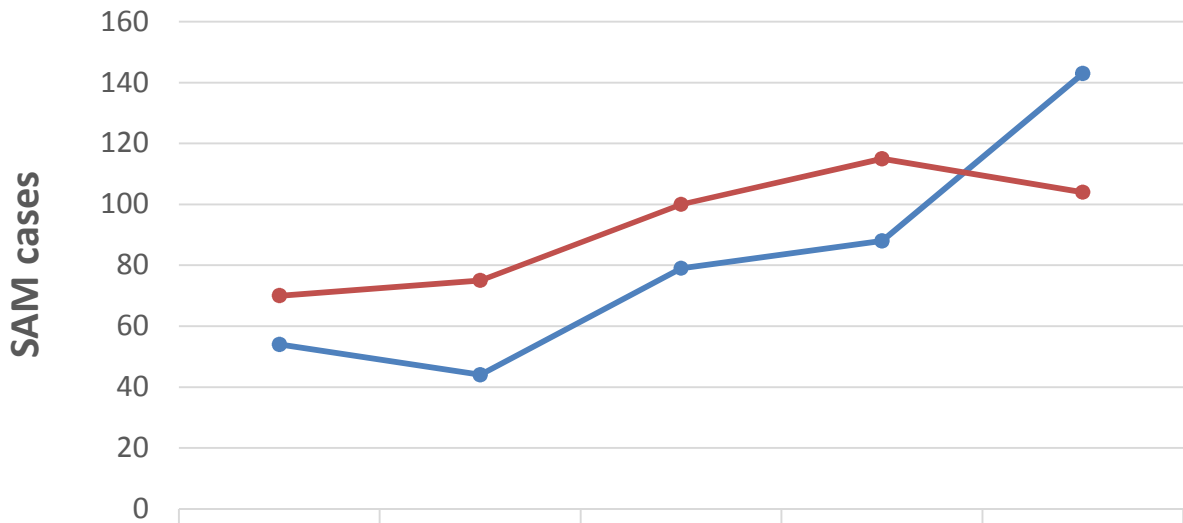


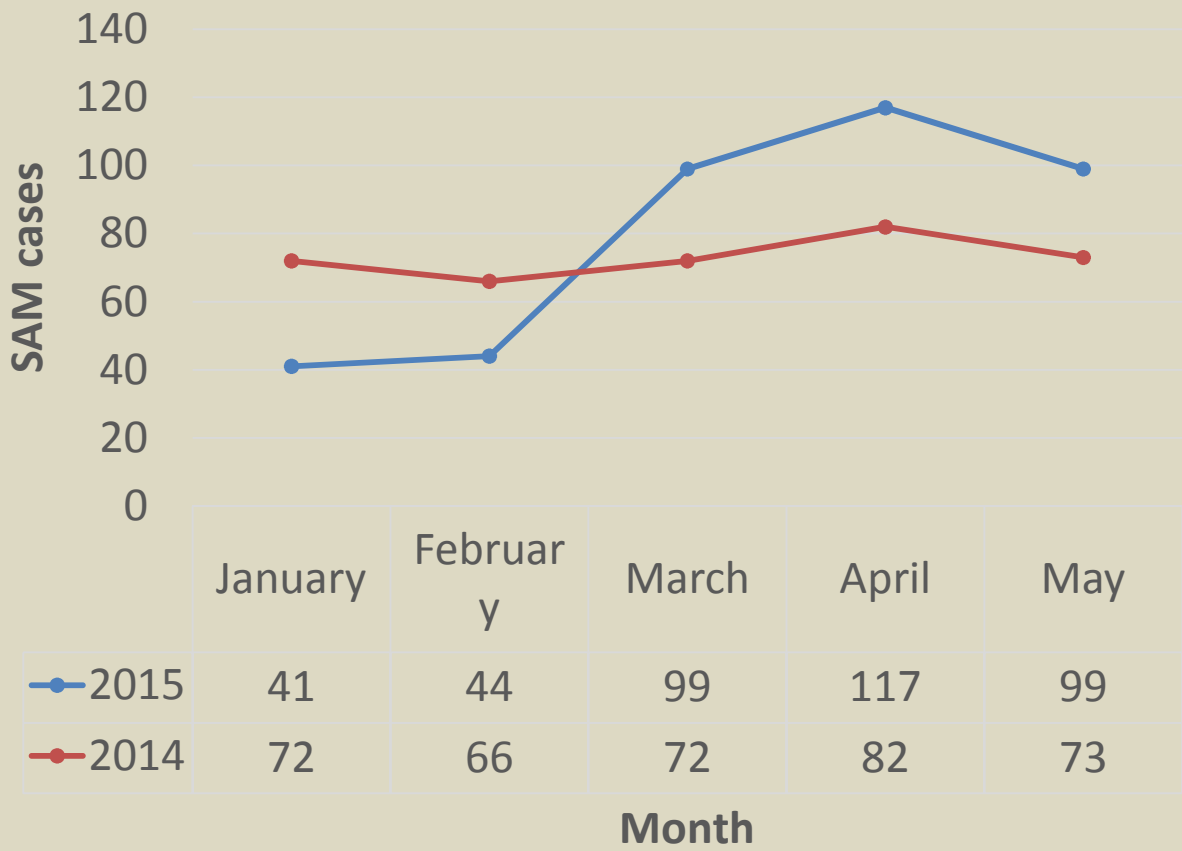


Figure 7.2.4 TFP Admission Trend Compared to the previous two years in Gurage Zone, SNNPR 2013-2015



	January	February	March	April	May
2015	54	44	79	88	143
2014	70	75	100	115	104

Month



7.2.2 Belg health and nutrition assessment report of Silte zone July,2015

Introduction

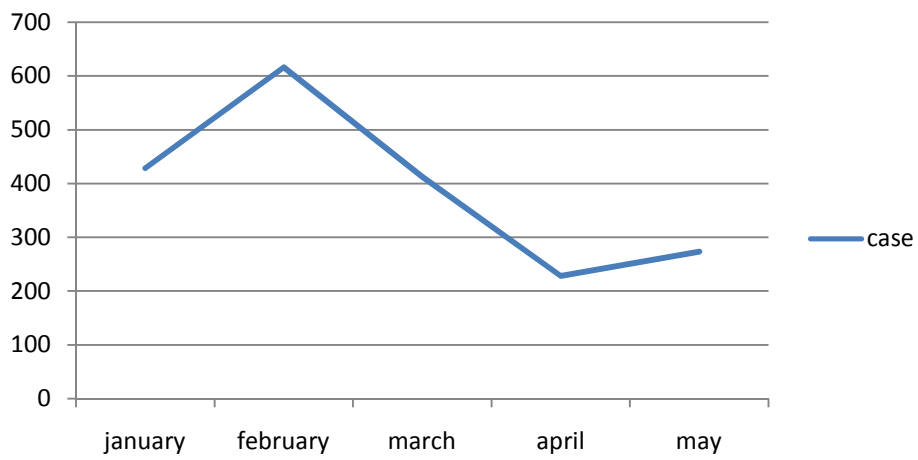
Silte zone is one of the 13 zones in SNNPR which have 8 district and 1 town administration This zone has total population of 990034,485116 male and 504918 female. Socio economic income of the community based on agriculture. There are 261 primary and 13 secondary school in the zone and 42% of zonal population has access to safe water. The zone have 1 specialized comprehensive hospital,3 primary hospitals,35 health centers and 188 health posts, which makes zonal health. During this assessment period discussion was held with the respective zonal departments (emergency task force) to identify vulnerable districts that might need emergency assistance for the upcoming year 2016 in the zone. Zonal Agriculture, water, Health and education departments selected Sankura, Alichowuriro and Lnfuro districts to be visited by the assessment team since they are *the most affected districts due to adverse weather conditions during the Belg season* ,water scarcity, and malnutrition.

When it comes to health emergencies, Malaria, AWD, Malnutrition, meningitis and measles are anticipated epidemics so far in the zone. In this Zone, there are 8 district's with an at-risk population of 920511.5 for malaria, population at risk for AWD district's those affected with AWD since 2006 , 7 district's with the total population 3023 at risk for malnutrition ,all districts with the total population 997914.9 at risk for meningitis and all districts with the total population 997914.9 at risk for meseals. Meseals outbreak reported March to 12th may 2007 it was 25 case and there were no death. Currently, there is no ongoing outbreak reported in any district's of the zone.

Objectives

- To evaluate the performance of the year 2015 belg rain and its impact on health and Nutrition situation in selected districts in SNNPR
- To identify areas and estimate the size of affected/risk population in need and required resources.

Malaria case in silte Zone



Silte zone have 96% latrine coverage and 87% latrine utilization. Meseals vaccination coverage of Silte zone is 107% and there were meseals outbreak and meseals vaccination campaign conducted in this year. Admissions of acutely malnourished children to Stabilization Centers (SCs) and Outreach Therapeutic c Centers (OTPs) continue to increase in many district of the zone. Total SAM cases at zone level January to May 2015 is 2,347 Out of this 2,161 OTP cases and 186 are SC cases. Therapeutic supplies shortage was observed in different time. In summary, the poor performance of the current rains ,shortage of water and food security problem will exacerbate the situation unless assistance interventions are timely and adequate.

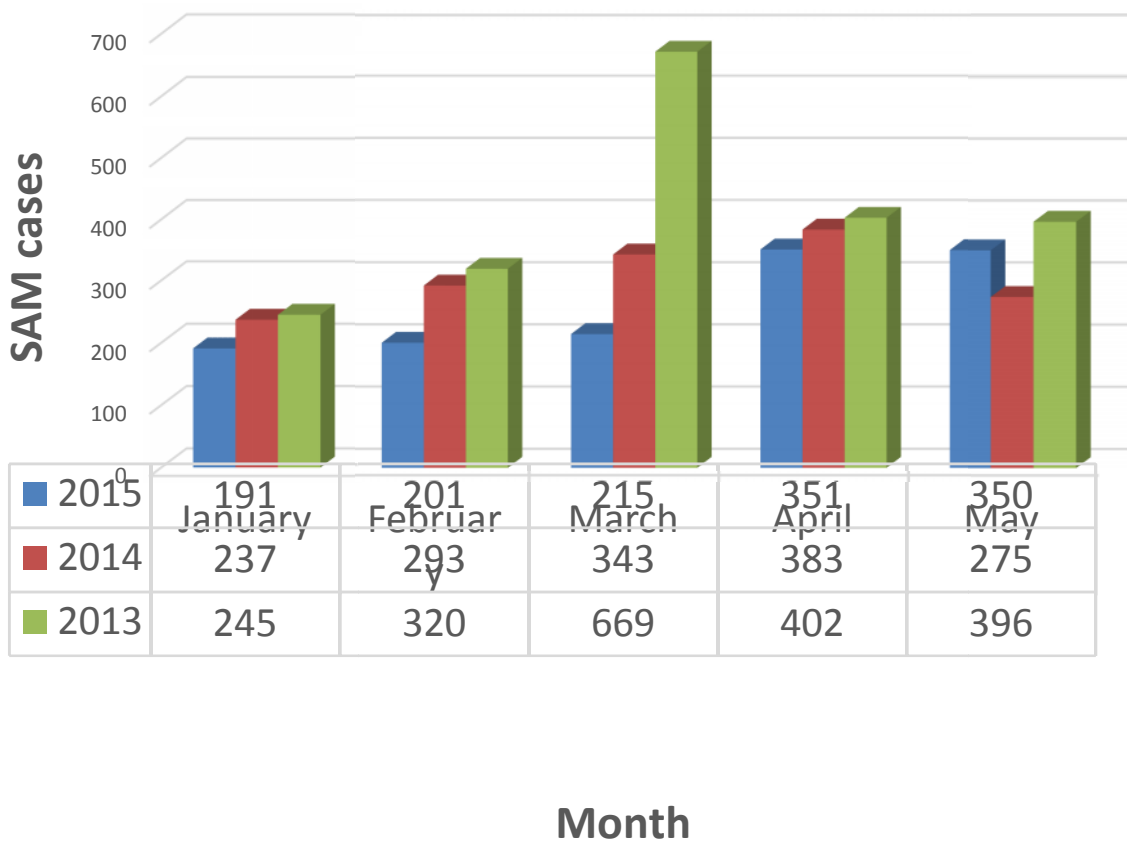
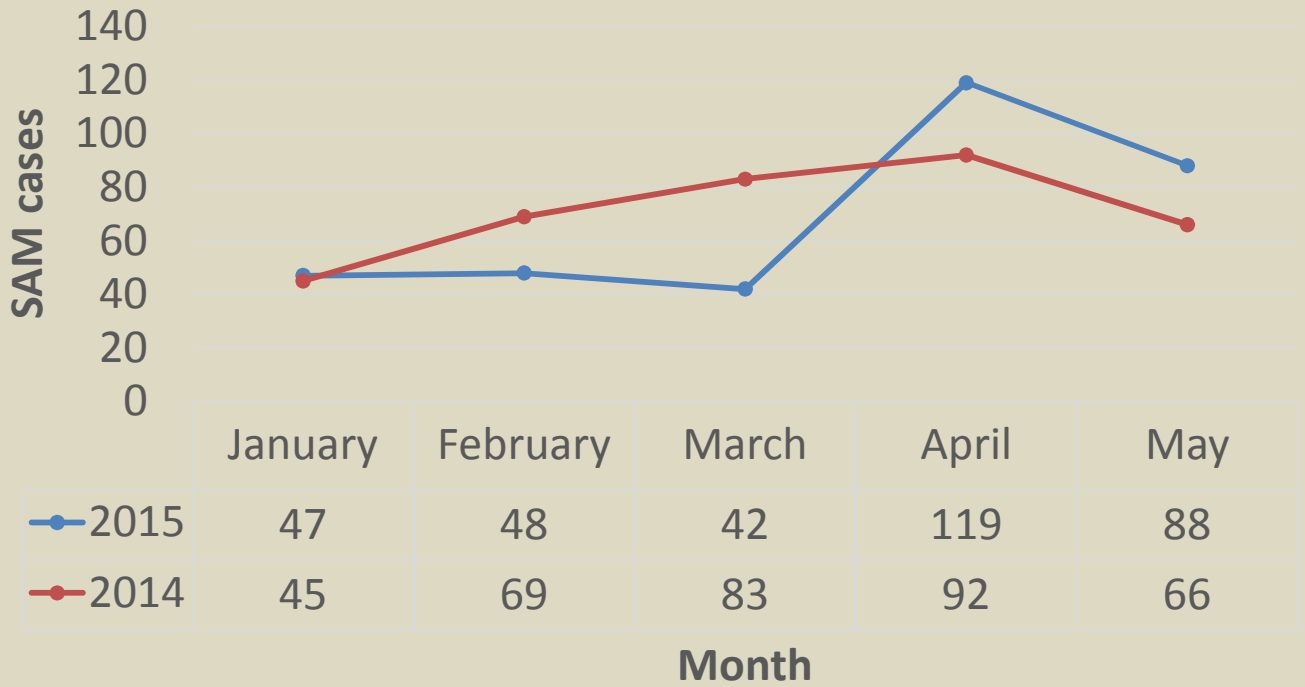


Figure 7.2.8 TFP Admission Trend Compared to the previous two years in Silte Zone, SNNPR 2013-2015



SAM cases

2015
2014

Month

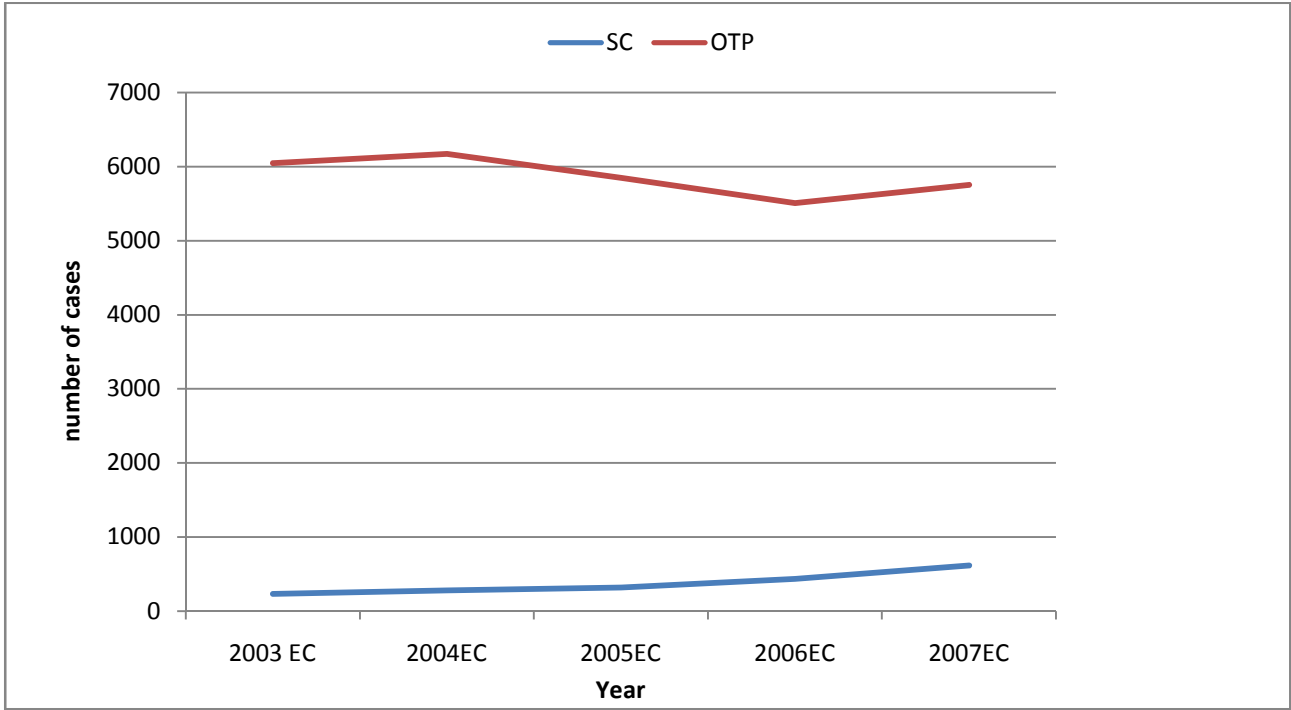
7.3 Rapid Nutrition Assessment In Southern, Nations and Nationality people Region (SNNPR) on Gedio Zone 13/12/2007- 5/13/2007

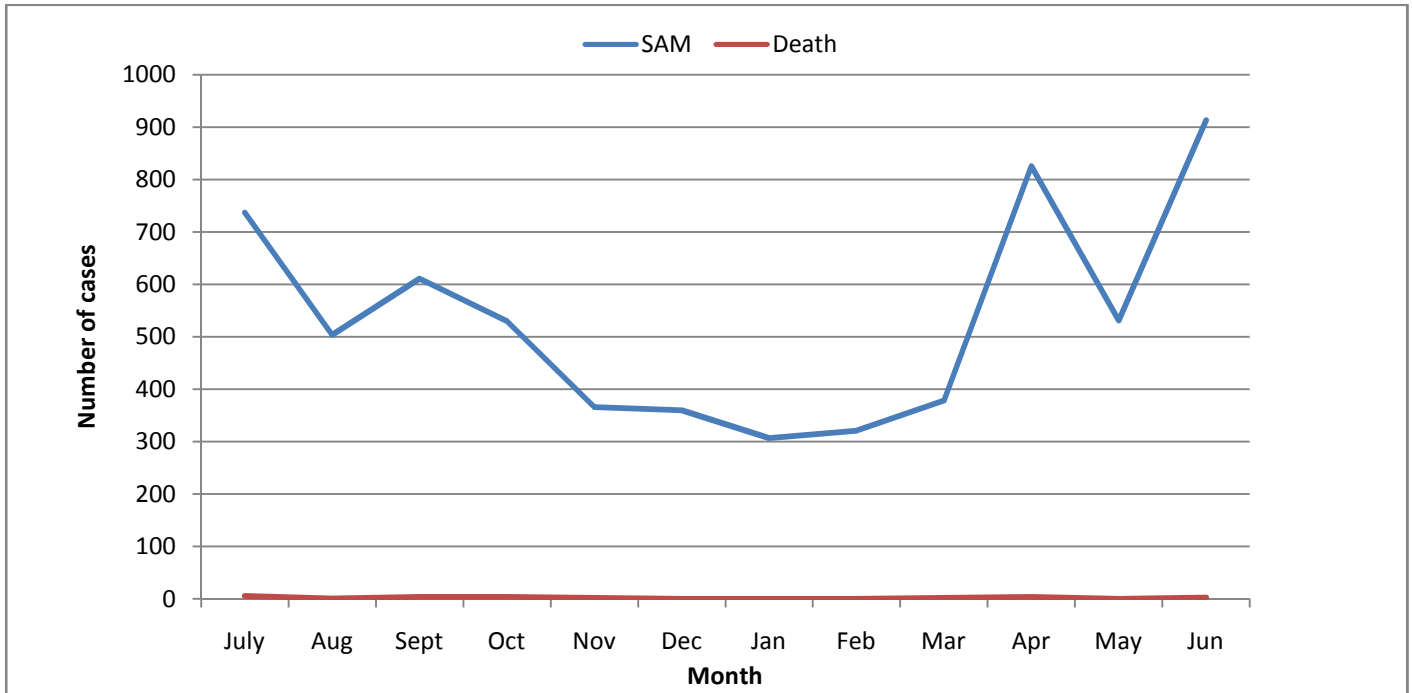
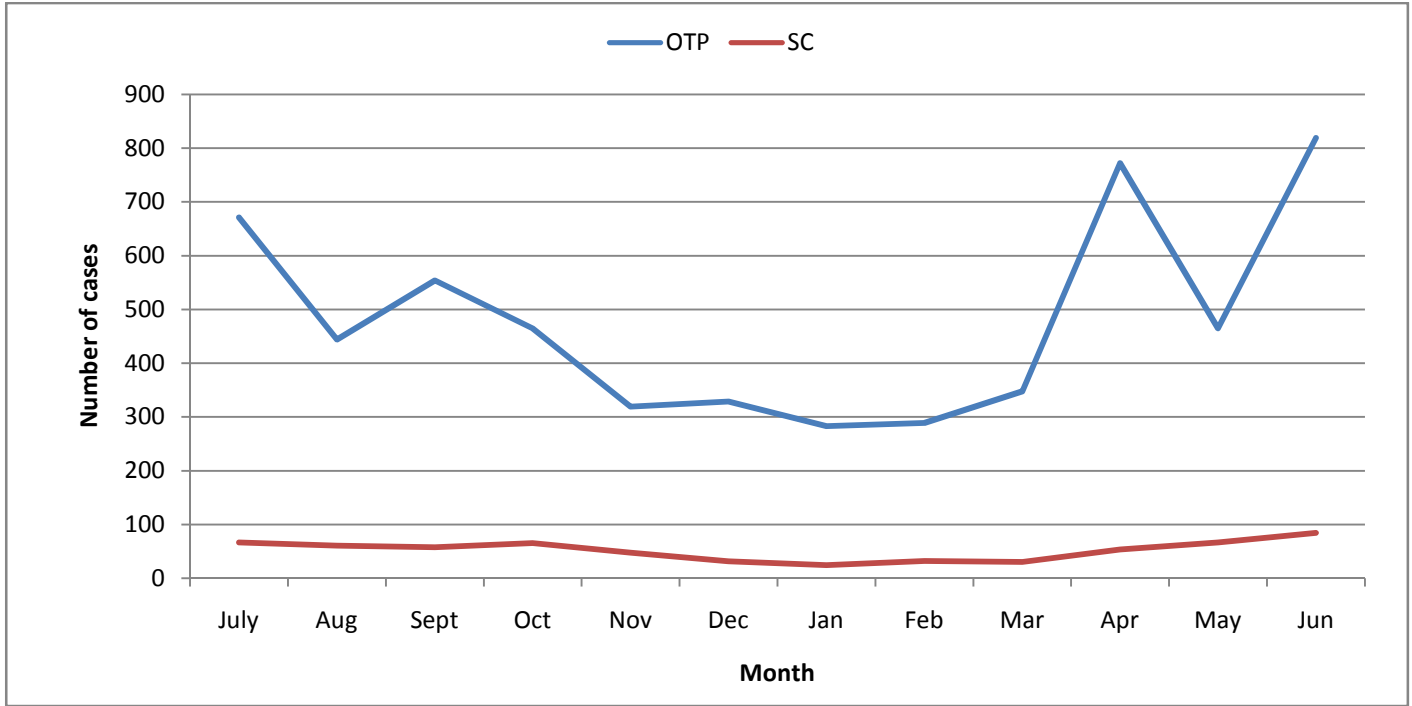
Introduction

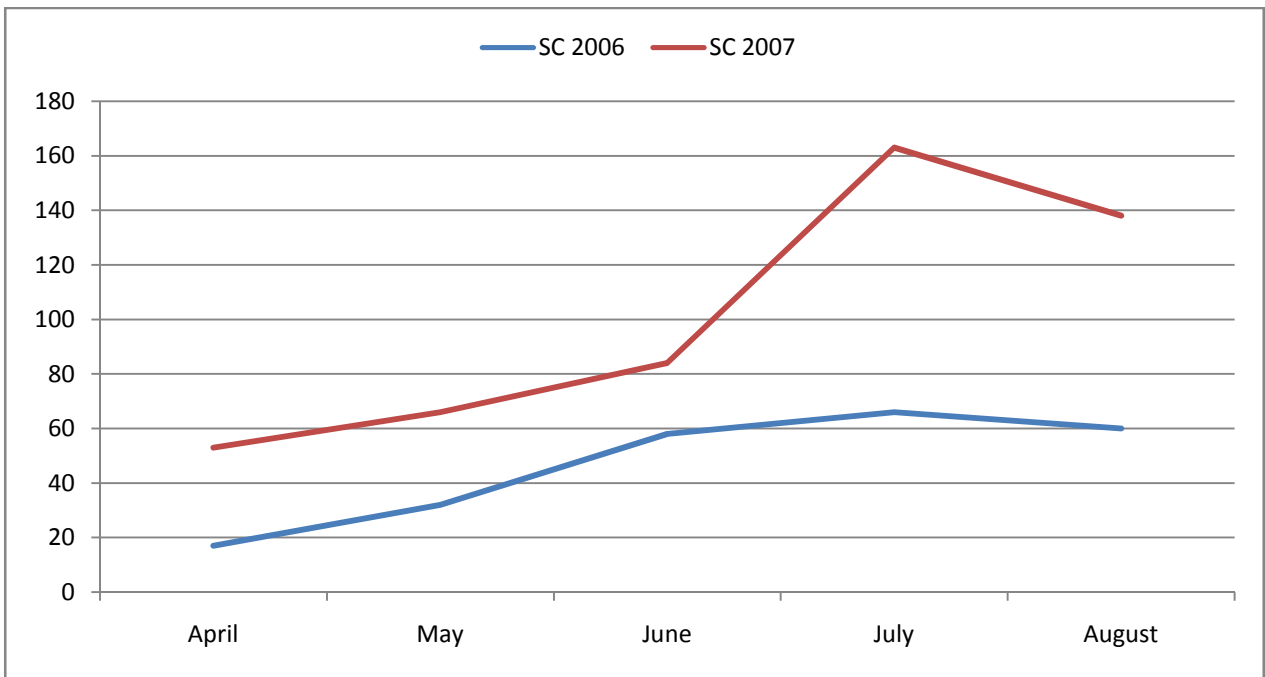
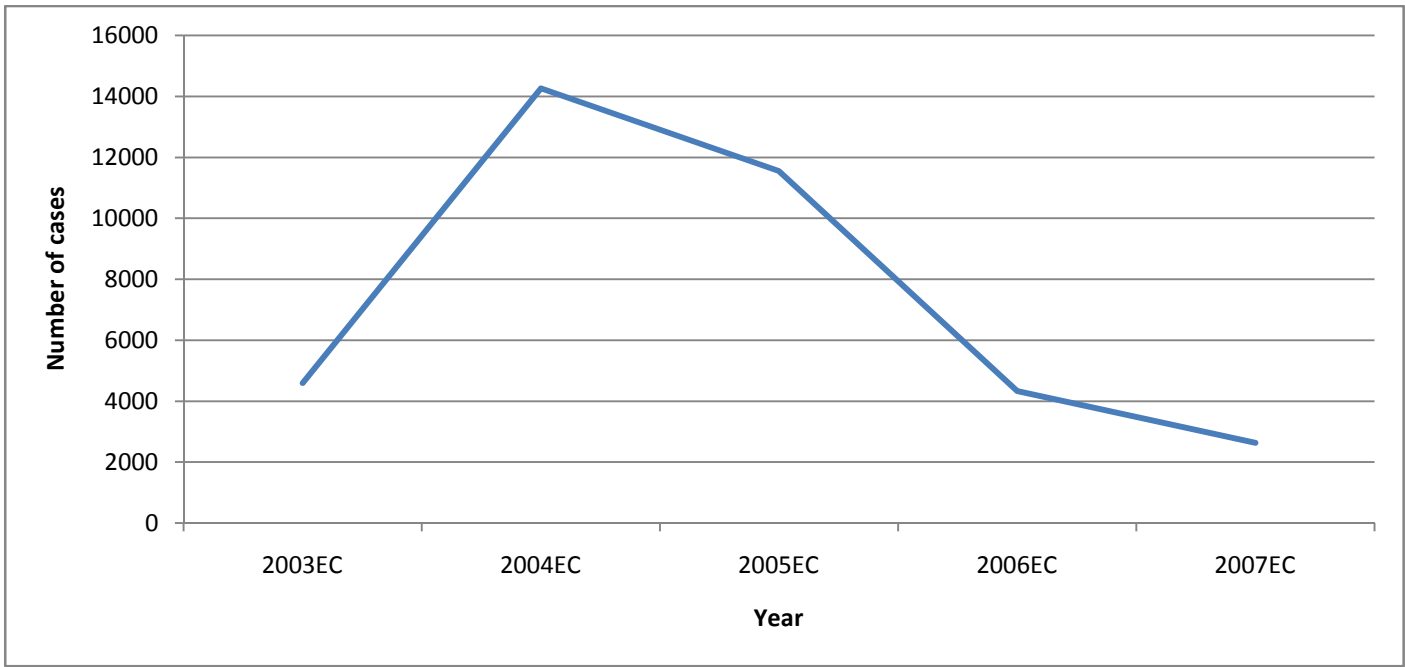
Gedio Zone is one of the zone in SNNPR divided into 6 district and two town with a total population estimation in 2007 is 1101344 ; 548469 M and 552875 F. Gedio zone is bordered on the south, East and West by Oromia region and north by Sidama Zone. The zone has the health service coverage of 100 % by Referral hospital, 27% by District Hospital,84% by health center and 100 % by health post. It has 92 % of latrine coverage, 71% IRS and 100% ITN coverage . There is 1 referral hospital, 37 HCs and 144 HPs serving the population in Gedio zone at this time. During this assessment period, discussion was held with the respective zonal health departments (MCH,PHEM, Disease prevention & logistic departments),Agriculture and Water departments to do rapid assessment on previously identified hotspot districts that might need emergency assistance for the upcoming year 2016 in the zone. When it comes to health emergencies, Malaria, AWD, Malnutrition, meningitis and measles are anticipated epidemics so far in the zone. In this Zone, there are 3malaria endemic district's and two towns with at-risk population of 350134.All districts with the total population 1101344 at risk for AWD & meningitis and at risk for malnutrition. Currently, there is an ongoing measles outbreak reported in Yirgachefe district's of the zone.

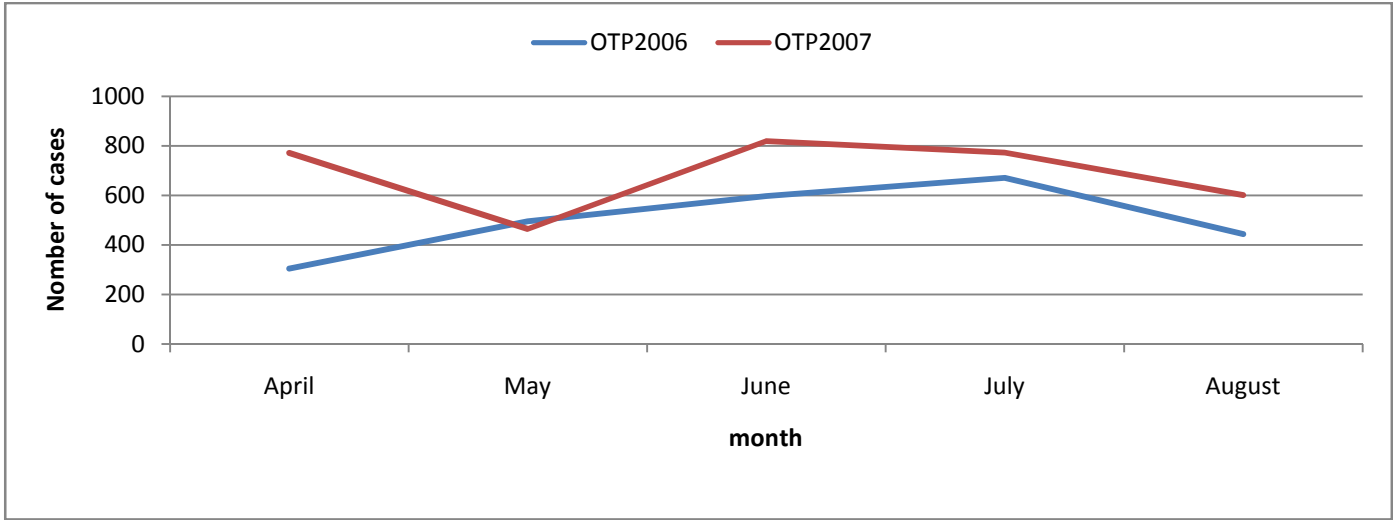
Objectives

- To verify whether flagged areas of concern by Early Warning (EW) reports are actually hot spots areas
- To assess whether there is a need for a standard emergency nutrition assessment
- To trigger an immediate response where acute needs are identified in specific areas or population groups.









Weakness of Gedio zone health department

- There are no functional rapid response team
- There are untrained staffs on PHEM and acute malnutrition management case in different levels of the Zone.
- Data not daily/weekly analyzed and interpreted in PHEM department
- There are large number of Non functionality of water supply systems
- There is no any water treatment chemical and not easily accessible to the community.
- Shortage of logistic supply for SAM management
- Trained staffs turn over specially PHEM focal and MCH focal in all levels
- Weak daily SAM identification and admission
- Budget not allocated for rapid emergency response for any disease outbreaks
- Lack of food supply for caretakers and lack of SFP

Recommendation

- Rapid response team should be functional
- Training should be provided for health workers on SAM management
- PHEM and MCH focal person in all level should be trained
- All necessary logistics and supply should be avail to SC and OTP sites
- Data should be analyzed interpreted and used on daily /weekly basis
- urgent maintenance of water supply system (spring, hand dug well)
- provision of water treatment chemicals
- strengthen daily base screening of SAM cases
- Attention should be given to allocate budget for rapid emergency response for any disease outbreaks
- Vehicles problems should be solved in Dilla zuria health office

Rapid Nutrition assessment in Gedio Zone ,Dilla Zuria(20/12/2007-22/12/2007)

Introduction

Dila Zuria district is one of the District in Gedio zone with a total population estimation in 2007 is 121151 ; M and F . Dila zuria is bordered on the south by Oromia region on the west by Oromia region on the north by Dilla town and east by Bule district. Dila zuria district have 78% of latrine coverage,55% of water supply. There are 5HCs and 27 HPs serving the population in Dila zuria at this time. During this assessment period discussion was held with the respective district health departments (MCH.PHEM, Disease prevention & logistic departments), Agriculture and Water departments to do rapid assessment on previously identified hotspot selected 3 kebeles that might need emergency assistance for the upcoming year 2016 in the District. We did our first rapid assessment on three of *the most affected kebeles due to adverse weather conditions during the Belg season* and It was poor both in amount, timeliness and distribution in all assessed kebeles. When it comes to health emergencies, Malaria, AWD, Malnutrition, meningitis and measles are anticipated epidemics so far in the district. Currently, there is no any outbreak reported in kbeles of the district.

Objectives

- To verify whether flagged areas of concern by Early Warning (EW) reports are actually hot spots areas
- To assess whether there is a need for a standard emergency nutrition assessment
- To trigger an immediate response where acute needs are identified in specific areas or population groups.

Methodology

The selection of the localities to be assessed within the district of interest is based on purposive sampling, the worst kebele are selected for the assessment. Typically, kebeles have been categorized by district administration in to three categories; worst affected, close monitoring and normal. Random selection done and three kebeles selected from those categorized as the worst affected. The teams used different questioner for the assessment purpose, focus group discussion, transect walk, screening and interviewee with key informants at different levels and visual/physical inspection of crops, livestock &pests, home visit and market conditions.

Interviews were conducted at the district level with local officials, household and community level.

Dilla Zuria Findings

Strength

- Established functional multi sectoral Emergency health and Nutrition coordination Committee and technical sub-committees in all level
- Hotspot kebeles identified
- Identified ,oriented ,assigned EHN focal person at all level
- Team identified ,trained and assigned for communication and social mobilization with in health and other sectors
- HAD trailed EHN on preparedness and response
- Presence of stabilization center most of the catchment at the district
- 24 hours per day service provision in SC center
- presence of safe water on all SC
- The district identified hot spot kebeles and categorized kebeles by the level of crisis
- They are having good health service on institutional delivery and other health facility service.
- There is no community death due to this food insecurity condition
- there were no vector breeding sites and stagnant water

Weakness

- PHEM focal person working by delegation from HPDP
- Lack of vehicle for surveillance system(only one motorbike for woreda office)
- Budget not allocated for rapid emergency response for any disease outbreaks
- RRT not functional
- not having trained personnel on acute malnutrition management
- Shortage of acute malnutrition management supply
- Weak daily SAM identification and admission
- Weak referral system of cases from community to health facility
- not providing food for the care takers at stabilization center
- No focal person assigned for WASH activity
- there are large number of Non functionality of water supply
- Water treatment chemical not available and also not easily accessible
- staple foods of the district not available all the time

- there is no SFP program in the district
- Late and insufficient provision of Supplementary food for screened beneficiary from the region and still not distributed for the needy people
- high number of beneficiary numbers(7654)
- 2015rainfall onset was significantly late and the amount and distribution poor & erratic.
- Poor condition of growing crop
- Rapid and sharp increasing trends in the prices of staple foods
- There is no food stock reserved from pervious harvest for household consumption.
- Orphans, female headed households and elderly groups are vulnerable people in the community for drought.
- Increasing trend of malnutrition children with edema and wasting.
- Average meals a day is around two and also less in amount and diversity.
- Mothers and father are engaged on daily labor work to generate income and to feed their kids. children's are suffering in hunger surprisingly even lactating mothers left their under 6 moth children at home for daily labor work.
- There is no any food aid in the community.
- There is harmful traditional belief on malnourished edematous children in most parts of the district.
- Shortage of safe water due to non functionality of water supply systems , maintenance problem and poor community management.
- There is no standardized and adequate latrine for public use in almost all parts of the district.
- protected springs most of them are not functional,
- Most visited households store the water on uncovered water containers.
- Poor latrine construction at public and individual levels and also most of them are uncovered pit latrine.
- In visited households rodents, mosquito and fleas are obvious problem in the community.
- The housing states of rural part of community is poor.
- In most of visited house there were no cereals, vegetables, meat ,egg

- Observed crops are almost all in poor condition to give expected yield and some garden plants also on same condition observed.

Screening result

Proxy SAM = $13/300*100=4.3\%$

Proxy MAM= $49/300*100=16.3\%$

Proxy GAM= $7+6+49+52=114/300*100=38\%$

Population at risk $52/300*100=17.3\%$

Recommendation

- Assign responsible focal person on PHEM & WASH activity at woreda health office
- Vehicles problems should be solved
- Attention should be given to allocate budget for rapid emergency response for any disease outbreaks
- **RRT** should be functional
- Training health workers on acute malnutrition management
- All necessary logistic for acute malnutrition management should be provided
- strengthen daily SAM identification and admission
- strengthen referral system of cases from community to health facility
- provision of food for the care takers at stabilization center
- urgent maintenance of water supply system (spring, hand dug well)
- provision of water treatment chemicals
- required amount of Supplementary food should be provided for the district considering beneficiary numbers.
- Health education should be given to the community on harmful traditional belief on malnourished edematous children.
- standardized construction and utilization of latrine should be practiced

Rapid Nutrition assessment in Gedio Zone ,Kochore (28-30/12/2007)

Introduction

Kochore District is one of the District in Gedio zone with a total population estimation in 2007 is 162767 ; 81058 M and 81709 F . Kochore district is bordered on the south & on west by Oromia region on the north by Yirgachefe and on the east by Gedeb district. Kochore district have 85 % of latrine coverage, 43.84% of water supply. There are 6HCs and 23 HPs serving the population in Kochore at this time. During this assessment period discussion was held with the respective district health departments (MCH.PHEM, Disease prevention & logistic departments), Agriculture and Water departments to do rapid assessment on previously identified hotspot selected 3 kebeles that might need emergency assistance for the upcoming year 2016 in the District. . When it comes to health emergencies, Malaria, AWD, Malnutrition, meningitis and measles are anticipated epidemics so far in the district. In with the total population 162 767 at risk for meningitis and there are 13 malaria endemic kebele's with an at-risk population of 85956. All kebeles with the total population 162767 at risk for AWD, all kebeles with total population 77916 at risk for meseals, and eight kebeles with the total population 12,695 at risk for malnutrition. There were meseals outbreak on June and meseals immunization campaign on affected kebeles was done and it was controlled. Currently, there is no any outbreak reported in any kebeles of the district.

Objectives

- To verify whether flagged areas of concern by Early Warning (EW) reports are actually hot spots areas
- To assess whether there is a need for a standard emergency nutrition assessment
- To trigger an immediate response where acute needs are identified in specific areas or population groups.

Methodology

The selection of the localities to be assessed within the district of interest is based on purposive sampling, the worst kebele are selected for the assessment. Typically, kebeles have been categorized by district administration into three categories; worst affected, close monitoring and normal. Random selection done and three kebeles selected from those categorized as the worst affected. The teams used different questioner for the assessment purpose, focus group discussion, transect walk, screening and interviewee with key informants at different levels and visual/physical inspection of crops, livestock & pests, home visit and market conditions. Interviews were conducted at the district level with local officials, household and community level.

Kochore district Findings

Strength

- Established functional multi sectoral Emergency health and Nutrition coordination Committee and technical sub-committees in all level
- Hotspot kebeles identified and categorized kebeles by the level of crisis
- Identified ,oriented ,assigned EHN focal person at all level
- Team identified ,trained and assigned for communication and social mobilization with in health and other sectors
- HDA trailed EHN on preparedness and response
- 24 hours per day service provision in SC center
- presence of safe water on Chelelektu SC
- They are having good health service on institutional delivery and other health facility service.
- Functional rapid response team and reporting of SC and OTP every three days.
- providing food for the care takers at stabilization center
- focal person assigned for WASH activity
- SFP program in the district started

Weakness

- Stabilization center is not opened in all hot spot catchment at the district
- Shortage of man power on PHEM and lack of commuter skill
- Lack of vehicle for surveillance system
- Budget not allocated for rapid emergency response for any disease outbreaks
- not having enough trained personnel on acute malnutrition management on SC
- Shortage of acute malnutrition management supply
- Weak daily SAM identification and admission
- Weak referral system of cases from community to health facility
- there are no safe water supply
- Water treatment chemical not available and also not easily accessible
- staple foods of the district not available all the time
- Late provision of Supplementary food for screened beneficiary from the region.
- 2015 rainfall onset was significantly late and the amount and distribution poor & erratic.
- Poor condition of growing crop
- Rapid and sharp increasing trends in the prices of staple foods
- There is no food stock reserved from pervious harvest for household consumption.
- Orphans, female headed households and elderly groups are vulnerable people in the community for drought.
- Increasing trend of malnutrition children with edema and wasting.
- Average meals a day is around two and also less in amount and diversity.
- There is harmful traditional belief on some kebeles on malnourished edematous children.
- There is no standardized and adequate latrine for public use in almost all parts of the district.
- Poor latrine construction at individual levels and also most of them are uncovered pit latrine.
- In visited households rodents, mosquito and fleas are obvious problem in the community.
- The housing states of rural part of community are poor.
- In most of visited house there were no cereals, vegetables, meat ,egg

- Observed crops are almost all in poor condition to give expected yield and some garden plants also on same condition observed.

Screening result

Proxy SAM = $22/300*100=7.3\%$

Proxy MAM= $29/300*100=9.7\%$

Proxy GAM= $76/300*100=25.3$

Population at risk= $25/300*100=8.3\%$

Recommendation

- Additional SC site should be accessible on hot spot kebeles
- Vehicles problems should be solved
- Attention should be given to allocate budget for rapid emergency response for any disease outbreaks.
- Training should be given to health workers on acute malnutrition management specially on SC
- All necessary logistic for acute malnutrition management should be provided
- strengthen daily SAM identification and admission
- strengthen referral system of cases from community to health facility
- Provision of Safe and adequate water supply to the community
- Health education should be given to the community on harmful traditional belief on malnourished edematous children.
- standardized construction and utilization of latrine should be practiced

Rapid Nutrition assessment in Gedio Zone, Wonago district(3/13/2007-5/13/2007)

Introduction

Wonago District is one of the District in Gedio zone with a total population estimation in 2007 is 145,635 ; 72526 M and 73109 F . Wonago district is bordered on the south by Yirgachefe district , on west by Oromia region , on the north by Dila Zuria district and on the east by Bulle district. Wonago district have 67% of latrine coverage, 36% of water supply. There are 5HCs and 20 HPs serving the population in Wonago at this time. During this assessment period discussion was held with the respective district health departments (MCH.PHEM, Disease prevention & logistic departments), Agriculture and Water departments to do rapid assessment on previously identified hotspot selected 3 kebeles that might need emergency assistance for the upcoming year 2016 in the District. . When it comes to health emergencies, Malaria, AWD, Malnutrition, meningitis and measles are anticipated epidemics so far in the district. There were measles outbreak on June and measles immunization campaign on affected kebeles was done and it was controlled. Currently, there is no any outbreak reported in any kbeles of the district.

Objectives

- To verify whether flagged areas of concern by Early Warning (EW) reports are actually hot spots areas
- To assess whether there is a need for a standard emergency nutrition assessment
- To trigger an immediate response where acute needs are identified in specific areas or population groups.

Methodology

The selection of the localities to be assessed within the district of interest is based on purposive sampling, the worst kebele are selected for the assessment. Typically, kebeles have been categorized by district administration in to three categories; worst affected, close monitoring and normal. Random selection done and three kebeles selected from those categorized as the worst affected. The teams used different questioner for the assessment purpose, focus group discussion, transect walk, screening and interviewee with key informants at different levels and visual/physical inspection of crops, livestock & pests, home visit and market conditions.

Interviews were conducted at the district level with local officials, household and community level.

Wonago district Findings

Strength

- Established functional multi sectoral Emergency health and Nutrition coordination Committee and technical sub-committees in all level
- Existence of functional technical sub-committees of the Emergency Health and Nutrition.
- Hotspot kebeles identified and categorized kebeles by the level of crisis
- Identified ,oriented ,assigned EHN focal person at all level
- HDA trailed EHN on preparedness and response
- All health workers identified, trained and assigned for acute malnutrition management.
- On four health center SC service ready and providing service for the community
- 24 hours per day service provision in SC center
- reporting of SC and OTP every three days
- providing food for the care takers at stabilization center
- focal person assigned for WASH activity
- SFP program in the district started

Weakness

- Absence of safe water on almost all SC set up, except Wonago health center
- No Functional rapid response team
- Lack of vehicle for surveillance system
- Budget not allocated for rapid emergency response for any disease outbreaks
- Shortage of acute malnutrition management supply
- Weak daily SAM identification and admission
- Weak referral system of cases from community to health facility
- there are no safe water supply
- Water treatment chemical not available and also not easily accessible
- staple foods of the district not available all the time
- Late provision of Supplementary food for screened beneficiary from the region.
- 2015 rainfall onset was significantly late and the amount and distribution poor & erratic.

- Poor condition of growing crop
- There is no food stock reserved from pervious harvest for household consumption.
- Orphans, female headed households and elderly groups are vulnerable people in the community for drought.
- Increasing trend of malnutrition children with edema and wasting.
- Average meals a day is around two and also less in amount and diversity.
- There is harmful traditional belief on some kebeles on malnourished edematous children.
- There is no standardized and adequate latrine for public use in almost all parts of the district.
- Poor latrine construction at individual levels and also most of them are uncovered pit latrine.
- In visited households rodents, mosquito and fleas are obvious problem in the community.
- The housing states of rural part of community are poor.
- In most of visited house there were no cereals, vegetables, meat ,egg
- Observed crops are almost all in poor condition to give expected yield and some garden plants also on same condition observed.

Screening result

Proxy SAM = $22/300*100=7.3\%$

Proxy MAM= $29/300*100=9.7\%$

Proxy GAM= $76/300*100=25.3$

Population at risk= $25/300*100=8.3\%$

Recommendation

- Additional SC site should be accessible on hot spot kebeles
- Vehicles problems should be solved
- Attention should be given to allocate budget for rapid emergency response for any disease outbreaks.
- Training should be given to health workers on acute malnutrition management specially on SC

- All necessary logistic for acute malnutrition management should be provided
- strengthen daily SAM identification and admission
- strengthen referral system of cases from community to health facility
- Provision of Safe and adequate water supply to the community
- Health education should be given to the community on harmful traditional belief on malnourished edematous children.
- standardized construction and utilization of latrine should be practiced

Chapter 8 – Protocol/Proposal for Epidemiologic Research Project

8.1 Assessment of the Utilization and Associated Factors of Insecticide-Treated Net (ITNs) in Boricha District ,Sidama Zone, SNNPR, Ethopia

Background

Malaria is a parasitic infection which is transmitted by the female anopheles mosquito bite. Malaria affects people worldwide and it was estimated that in 2010 about 3.3 billion of the world population were at risk of malaria. Uses of ITN, together with indoor residual spraying (IRS) are the two most important vector control measures that protect humans from the bite of mosquitoes carrying the malaria parasite. However, there is a huge discrepancy between ownership and use of ITNs. Therefore, this study was designed to investigate the possession, use, and factors affecting use of ITNs in the Boricha district.

Objectives

Assess Insecticide-Treated Net (ITNs) Utilization and Associated Factors In Boricha District ,Sidama Zone ,SNNPR, Ethiopia.

Method

A community based cross -sectional study will be carried out using structured questionnaire among households with at least one or more ITN.A systematic sampling technique will be applied to select 384 households after selecting three kebelles randomly from the district. Data entry and analysis will be performed using epi-info 7 software.

Time frame

This study will be conducted from August 8,2016 up to September 1,2016 on a sampled 483 households and will be finalized the result on September 16,2016.

Estimated Budget

Table 8.1.1 .Budget breakdown for proposed survey in Boricha distict ,sIdama zone ,SNNPR ,2016

Se no	Item	Measurement	Quantity	Unit Cost/Rate		Duration	Total price(Ethopian birr)	Total cent
				Price (Ethiopian birr)	Cent			
1	Personnel expense							
	Supervisor	Each	2	300/day		15 days	9000	00
	Data collector	Each	8	200/day		15	24000	00
	Subtotal						33,000	00
2	Materials & equipment's cost							
	Paper	Pack	4	160			640	00
	Pen	Each	20	7			140	00
	Pencil	Each	20	2	.50		50	00
	Eraser	Each	10	4			40	00
	Pencil sharpener	Each	10	4			40	00
	Clipboard	Each	10	40			400	00
	Printing	pages	300	1			300	00
	copying document	pages	12,000		.50		6000	
	Binding document	number	5	25			125	
	Subtotal						7,610	00
	Transport							
	Trip to advisor		1	30 birr/day		10days	300	00
	Supervisor	Each	2	100/day		15days	3000	00
	Data collector	Each	8	50/day		15days	6000	00
	Subtotal						9300	00

Introduction

Malaria is a parasitic infection which is transmitted by the female anopheles mosquito bite. Malaria affects people worldwide and it was estimated that in 2010 about 3.3 billion of the world population were at risk of malaria (1). Again globally, an estimated 3.4 billion (half of the world population) people were at risk of malaria in 2012. Most of the estimated 80% of cases and 90% of deaths occurred in sub-Saharan Africa (SSA) and 77% of deaths were among children under 5 years of age. World Health Organization (WHO) estimates that 207 million (uncertainty interval, 135-287) cases of malaria and 627 000(uncertainty interval, 473 000-789 000) deaths of malaria occurred globally in 2012 (2). Approximately 52 million people in Ethiopia (approximately 68 % of the national population) live in malaria risk areas, primarily at altitudes below 2000 m (3,4)

Different controlling measures have been studied in relation to Malaria and use of ITN (Insecticide Treated Net) is one of the major vector control measures in Ethiopia. More than 20 million ITNs were distributed between 2005 and 2007, enabling 68 % of the households living in malaria-endemic areas to own at least one ITN. Indeed, 15 million ITNs were distributed in 2010 and 2011 to replace long-lasting insecticidal nets (LLINs) distributed previously (4). Different scientific evidences revealed that consistent use of ITNs can reduce malaria transmission by up to 90% and overall reduction of child mortality by 17 % could be demonstrated (5). There is also evidence that if more than 80 % of households in an area sleep under an ITN, malaria transmission is significantly reduced, which can benefit people who do not use an ITN themselves (6). By 2012, Several African countries had adopted the WHO recommendations to provide ITNs to all persons at risk for malaria and distribute ITNs free of charge (7). In Ethiopia, .Recently the FMOH set the targets that all (100%) of households in malarious areas own, on average, two ITN or one ITN per sleeping space and at least 80% of people at risk of malaria use ITNs (8).

As outlined in the HSDP IV and the National Malaria Strategic Pan 2011-2015, LLINs should be provided to households in malaria-endemic areas, i.e. areas that are below 2,000 m above sea level. Additionally, some kebeles above this altitude may be targeted for LLIN distribution as well, if there is documented evidence of repeated malaria outbreaks. Despite this rapid complete coverage of each kebele since 2005, it is unlikely that all LLINs are still in use after three years. This is supported by MIS 2007 results, which showed that actual LLIN ownership and use fall

short of predictions based on administrative coverage rates. Field visits and experience show that a substantial number of LLINs are damaged beyond use before their expected lifespan (i.e. 3-4 years). Some reports show that it is likely that up to 40% of LLINs are 'lost' (e.g. due to wear and tear, or alternative use) by the end of the second year of ownership (9).

About 65% of the population in Southern Nations and Nationalities People Region (SNNPR) is living in malaria endemic areas (10). Studies in various African countries, including Ethiopia, have revealed discrepancies between ITN possession and use (11).

Even though enough evidences regarding the coverage and of ITNs among settlers in malaria-prone areas, the evidences we got from Boricha district Health office report that Malaria continues to be the top five leading causes of under-five mortality and morbidity, and also the top ten leading causes of adult morbidity and mortality (12). The district also confirmed that the ITNs were distributed during 2004 to 2007 E.C, assuming 3 years life span and 1 ITN per 1.8 persons (Sidama zone health department and Boricha district annual report). It seems that there is a huge gap at the community level that the utilization of ITN seems unresolved issue. Therefore, this study was designed to investigate the possession, use, and factors affecting use of ITNs in the Boricha district. This study also helped to evaluate the local ITN programs with reference to FMOH and WHO recommended targets (13).

Literature Review

A study conducted in Nigeria showed that Mosquito net utilization among the under-fives was low despite high net ownership rate by households. About 139 (51.5 %) mentioned sleeping under mosquito net while 138 (51.1 %) acknowledged the use of insecticide sprays. Although 191 (71.5 %) of the households possessed at least one mosquito net, only 25.4 % of the under-5 children slept under any net the night before the survey. No statistically significant reduction in malaria parasitaemia was observed with the use of mosquito nets among the under-5 children (14).

A population-based cross-sectional survey of female heads-of-household in Zambézia showed that 64.3 % were in possession of at least one mosquito bed net. Fifty percent of children 0-59 months slept under a mosquito net the previous night in 2010 compared to 60 % in 2014. Factors associated with use of a mosquito net for female head-of-household respondents were higher education, understanding Portuguese, larger household size, having electricity in the household, and larger household monthly income (15).

A study carried out in three district of Jimma Zone, Southwestern Ethiopia, from December 2013 to January 2014 showed that 70.9% of the surveyed households had at least one LLIN, and 63.0% had sufficient LLINs for every member of the household. With respect to access, 51.9% of the population had access to LLIN. Only, 38.4% had slept under LLIN the previous night with females and children having priority to sleep under LLIN. This gave an overall use to access ratio of 70.2% which resulted in behavior-driven failure of 29.8%. Of the households with sufficient LLIN access, females and children aged 0-4 years were more likely to use LLINs than other household members. Shape of nets, sleeping arrangements, low risk perception, saving nets for future use, awareness and negligence, and perception of low efficacy of the LLINs contributed to behavioral failures. In conclusion, LLIN use was hampered by lack of ownership and most importantly by behavioral driven gaps. This calls for designing and implementing appropriate behavioral change communication strategies to address behavioral failure. Improving access to LLINs also needs attention (16).

A community based cross-sectional study was conducted in Harari National Regional State from September to October, 2012. ITNs Ownership was low as compared to the target by Federal

ministry of Health of Ethiopia. Though utilization of ITNs was promising, there are still significant number of participants who demonstrate hanging and tucking improperly. The study was about ownership and utilization of insecticide treated nets for Malaria and it showed that about 57.9% of participants had at least one ITNs. The utilization of ITNs based on history of sleeping under net in the previous night was 73.3%. Regarding proper use of ITNs, 57.9% of respondents demonstrated proper hanging and tucking. Those households with secondary school education, knowledge about ITNs use and knowledge of malaria transmission by bite of mosquito have more likely hood to own ITNs (17).

A study conducted in Northern Ghana on the effect of insecticide treated bed net usage showed that Insecticide-treated bed net usage among children enhances their survival rates. Thus, under-five mortality among children who sleep under treated bed nets is about 18.8% lower than among children who do not sleep under treated bed nets (18).

Statement of the problem

Use of ITN is one of the intervention method for prevention malaria and at that to reduce malaria infection and its adverse effect, especially among pregnant mother that it causes adverse pregnancy out for the mother, the fetus and new born. Uses of ITN, together with indoor residual spraying (IRS) are the two most important vector control measures that protect humans from the bite of mosquitoes carrying the malaria parasite (19). However, to get maximum benefit from ITN, increasing utilizations is mandatory. But utilization of ITNs are very crucial because there may be presence of different barriers (associated factors) like available ITNs may be left unused, inconsistent use, frequent washing, fear of toxicity, lack of convenient space to hang, having worn out bed nets, economic and educational background, misinformation, saving nets for the future and being used for other purpose. A huge discrepancy was reported between ownership and use of ITNs (20).

Significance of the Study

The finding of this study will show the level of ITN utilization among household and also contribute to the understanding of specific factors that affect the use of ITNs in the Boricha district. It also provide accurate and valuable information to the existing responsible bodies in the health system such as health center- health post linkages, the role of Health Development

Army (HDA), household level visit by HEWs and other stakeholders. The information obtained will be a useful guide for formulating appropriate policies and programs for the promotion of ITNs utilization in order to prevent malaria. The study findings can be also used as a good baseline information and guide to the SNNPR health bureau, Sidama Zone Health department (ZHD) in order to apply and promote` similar interventions in other similar districts.

Objectives of the Study

General Objective

To assess Utilization of Insecticide treated Nets and factors that affect utilization of ITNs among the household in Boricha district 2/12/2008-26/12/2008.

Specific Objectives

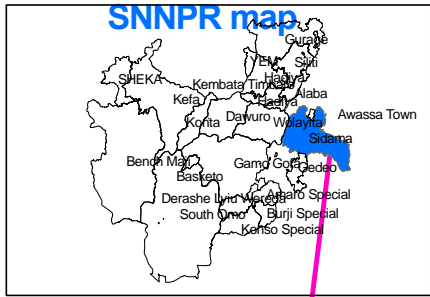
To determine the proportion of ITNs utilization of households in Boricha district.

To identify the intra- household practice that affects the use of ITNs in Boricha district.

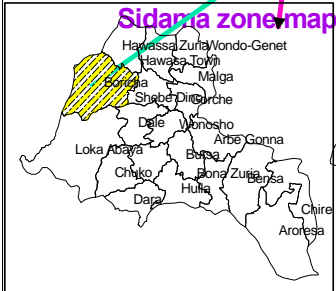
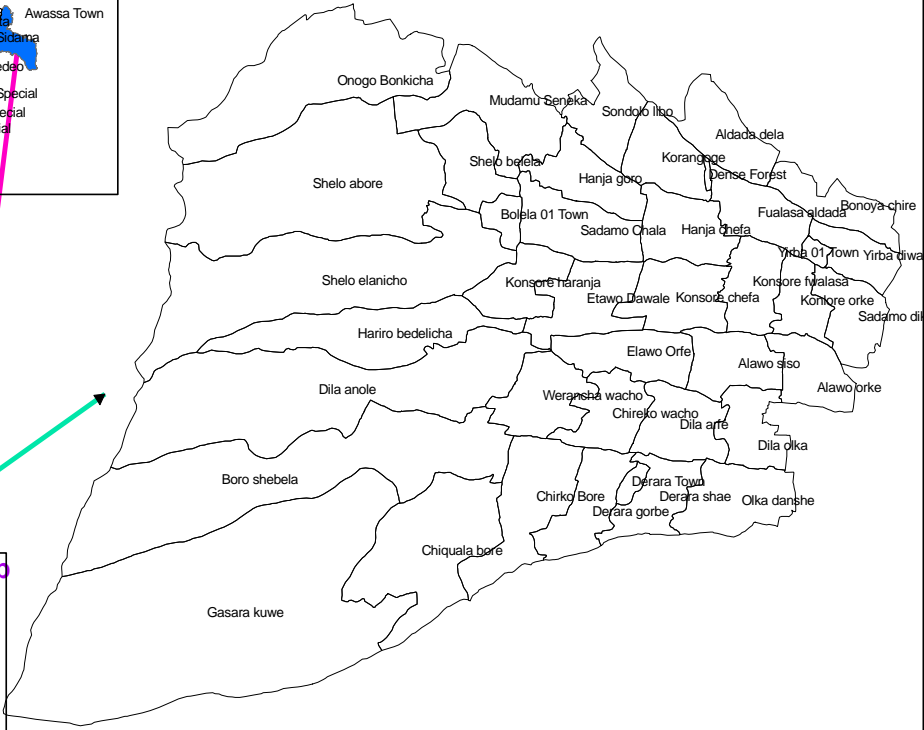
Research Methodology

Study area and population

Boricha district is one of the 19 districts in Sidama administrative Zone of SNNPR; it is located 25 km south of Zonal capital city Hswassa . The district is bordered on south by Loka Abaya ,on the west by the Wolyita ,on the north west by Oromia Region ,on the northeast by Hawassa Zuria, on the east by Shebedino District and on the southeast by Dale District .The total area of the district is about 61793.18 hectares. According to projections based on 2008 central statistical authority (CSA) population census of Ethiopia and district Health office data, the total population for 2008 E.C estimated at 310133 (9 % urban & 91% rural)in 42 kebeles, among these, 3 urban and 39 rural kebeles[District office report]. All of them are malarious kebele their altitude ranging between 1350 to 2550 meters above sea level. Concerning the health care services, there are 11 health centers, 39 health posts and 7 private clinics. The district health office annual report during 2004 to 2007 E.C showed that approximately 10801 in 2004 and 174,400 in 2007 ITNs were distributed for 15,407 households in all kebeles free of charge by Ministry of health based on 1 ITN per 1.8 persons micro planning. This makes the coverage 100% (Sidama zone health department and Boricha district annual report).



Boricha district Map



Inclusion criteria:

Households owning at least one or more ITN(s) households will be included in the study.

Those aged above 18 years will be included in the study.

Sample size determination

Sample size is determined using a single population proportion formula. Considering P(prevalence)=50%, Z=1,96(level of significance), D(degrees of marginal error)=0.5%

$$N = \frac{Z^2 P(1-P)}{D^2}$$

D2

Therefore, N=384 is the minimum sample required to assess utilization and associated factors in the district.

Sampling procedures

Boricha district has 42 malarious kebele where ITNs were distributed to households in the past three years (12). The number of households identified from the last year ITN distribution list of each kebele and the ITN coverage in all selected kebeles is more than 100%. Therefore, considering the population's homogeneity in all factors associated with ITN utilization, 8 kebeles will be selected by lottery method of simple random sampling technique. Then, the study units, 384 households will be proportionally allocated according to their size of households having at least one or more ITNs. The study units, 384 households owning at least one or more ITNs, will be selected by systematic random sampling from the lists of households supplied with ITNs. The first household will be identified by using a modified walking technique starting at the center of selected kebele, and thereafter at regular intervals, other households with similar characteristics will be selected. If there is no ITN in the household the next nearest household will be included. The heads of households or mothers will be interviewed and inspected by survey teams.

Data collection procedures

The data will be collected by interviewer administered using pretested and structured questionnaire (partially adapted from different sources like MIS 2011, EDHS 2005 and previous

works). Initially; the questionnaire will be prepared in English and then translated to local language of the study area (Sidama language). The latter version will back translated to English, to ensure its consistency. The questionnaire has four sections and includes variables related to socio-demographic characteristics of households, knowledge about ITNs, utilization and current status of ITNs. A total of 8 enumerators (health professionals who are diploma holder or above diploma and who can write, read and speak sidama language) and two health workers as supervisors will be recruited, and one day training will be given for them. Regular daily supervision of the data collectors and checking of the completeness and accuracy of data will be made by the principal investigator.

Variables of the study

Dependent variable :

Utilization of ITNs by households

Independent Variables:

- Socio-demographic variables: such as age, sex, educational status of respondent and of spouse, source of income, family size, type of house construction, availability of bed room, etc.
- Health information: such as Knowledge about malaria, ITNs utilization and benefits of ITNs
- Environmental variables: such as place of residence, season of the year
- -About the ITNs: Number of ITN freely supplied to households, date when obtained, shape of ITNs, current condition and color.

Data Quality Management

Questionnaire will be pre-tested and translated in to the local language, Sidamign and retranslated to English to check the quality. Data collectors will be trained before the data collection. Data will be checked for completeness and consistency and any incomplete information will be excluded from the entry.

Data Analysis procedures

The data will be entered in to Epi-info version -7. The data will be analyzed using EPI-enfo. Frequency distribution and percentage will be calculated to describe the socio-demographic characteristics and the ITNs utilization in the district. Regression analysis will be carried in order to find factors that affect the utilization of ITN.

Ethical Consideration

Ethical clearance will be obtained from SNNPR regional Health Bureau. Respondent will be briefed about the purpose and the confidentiality of the research, and also the importance of providing right information.

Reference

1. WHO, 2011 -Determinants of Insecticide-Treated Nets utilisation in older children and young adults in Zambia from the Malaria Indicator Survey 2010.
2. World Health Organization(WHO), World malaria report 2013, Geneva : WHO/UNICEF, 2013. 23-29.
3. Federal Democratic Republic of Ethiopia. National malaria guidelines. Third edition. Ministry of Health. Addis Ababa, 2012.
4. Loha E, Tefera K, Lindtjørn B. Freely distributed bed-net use among Chano Mille residents, south Ethiopia: a longitudinal study. *Malaria Journal*. 2013;12: 23. doi:10.1186/1475-2875-12-2
5. Gimning JE, V.J., Impact of permethrin – treated bed nets on entomological indices in an area of intense year – round malaria transmission. *Am J Trop Med Hyg*, 2004. 68(4): p. 16-21.
6. Center for Disease Control, Malaria towards the Abuja targets, Geneva: RBM/CDC. 2008.
7. World Health Organization(WHO), World malaria report 2013, Geneva : WHO/UNICEF, 2013. 23-29

8. Fmoh, National Malaria Guidelines (Third Edition), Addis Ababa: Fmoh. 2012: P. 31-38. 7. President's Malaria Initiative, President's Malaria Initiative Ethiopia Malaria Operational Plan Fy 2014, Addis Ababa : Usaid. 2014
9. National Malaria Guidelines Third Edition Addis Ababa January 2012)
10. SNNPR Health Bureau, Malaria Prevention and Control Department. Annual Report ,Hawassa: RHB. 2005/06 .
11. SNNPR Health Bureau, Malaria Prevention and Control Department. Annual Report ,Hawassa: RHB. 2005/06.
12. Boricha district Health Office report
13. Reference Insecticide treated nets use and its determinants among settlers of Southwest Ethiopia
14. [Iwuafor AA](#)¹, [Egwuatu CC](#)², [Nnachi AU](#)³, [Ita IO](#)¹, [Ogban GI](#)¹, [Akujobi CN](#)², [Egwuatu TO](#)⁴. Malaria Parasitaemia and the use of insecticide-treated nets (INTs) for malaria control amongst under-5 year old children in Calabar, Nigeria. [BMC Infect Dis.](#) 2016 Apr 14;16(1):151.
15. [Moon TD](#)^{1,2,3}, [Hayes CB](#)⁴, [Blevins M](#)^{4,5,6}, [Lopez ML](#)⁷, [Green AF](#)^{4,5}, [González-Calvo L](#)^{4,5}, [Olupona O](#)⁸; [Ogumaniha-SCIP Zambézia Consortium](#). Factors associated with the use of mosquito bed nets: results from two cross-sectional household surveys in Zambézia Province, Mozambique. [Malar J.](#) 2016 Apr 11;15(1):1
16. [Birhanu Z](#)¹, [Abebe L](#)², [Sudhakar M](#)³, [Dissanayake G](#)⁴, [Yihdego Y](#)⁵, [Alemayehu G](#)⁶, [Yewhalaw D](#)⁷. Access to and use gaps of insecticide-treated nets among communities in Jimma Zone, southwestern Ethiopia: baseline results from malaria education interventions. [BMC Public Health.](#) 2015 Dec 29;15:1304.
17. [Teklemariam Z](#)¹, [Awoke A](#)¹, [Dessie Y](#)², [Weldegebreal F](#)¹ Ownership and utilization of insecticide-treated nets (ITNs) for malaria control in Harari National Regional State, Eastern Ethiopia. [Pan Afr Med J.](#) 2015 May 25;21:52.
18. [Afoakwah C](#)¹, [Nunoo J](#)², [Andoh FK](#)³. Effect of insecticide-treated bed net usage on under-five mortality in northern Ghana. [Malar J.](#) 2015 Aug 7;14:309.
19. WHO
20. Netmark/Usaid, Ethiopia Bednet Utilization Study:Why Some Nets Owned Are Not Used,Addis Ababa :Usaid. 2007.

Chapter 9 -Other Additional Output Reports

9.1 Road traffic injury Proposal submitted for Pre-TEPHINET GLOBAL Conference NCD Training Workshop

Dear TEPHINET Team,

I am Meseret Mengesha Bilal, currently I am a cohort six female resident in Ethiopian Field Epidemiology Training program in Addis Abeba University, Ethiopia. I am very interested to participate on the Pre-TEPHINET Global Conference NCD Training Workshop. Considering my country Ethiopia, which is one of the fastest developing countries in Africa, currently Road trafficking is one of the important public health issue. Therefore, my topic of interest that I am going to apply for the training will be a road traffic injury. I am hoping that attending this training will help me to enhance my knowledge through experience sharing from different experts and researchers on Road traffic injury. Moreover, this directly will benefit my country through my research contribution. I describe the details of the research topic that I intended to do, in the next paragraphs.

Road traffic injury has been a public health problem, resulting in an estimated 1.2 million deaths and 50 million injuries worldwide each year, and it is projected to become the world's third leading cause of premature death by 2020. Especially in developing countries, it is getting worse because of rapid motorization, rapid urbanization coupled with poor road conditions, rapid population growth, lack of safety features in cars, crowded roads, poor road maintenance, and lack of police enforcement. Ethiopia is one the countries with high morbidity and mortality related to road traffic accident and currently ranked 12th in the world by the WHO. Additionally, injuries, disability, and devastating economic lose due to death of active productive population (15-59 years) and materials damage make the problem worse. It is one of the Top 10 leading causes of inpatient deaths in most regions of Ethiopia.

According to WHO-Global Status Report on Road Safety, the common key risks for road traffic injuries are speed, drink-driving, motorcycle helmet use, seat belts and child restraints. So, only 35 countries had strengthened their legislation of road traffic injury by mandating and enforcing seat belts, child restraints, and helmets, and by limiting speed and alcohol levels. Therefore, the majority of road traffic injuries and deaths can be prevented by addressing one or more risk factors. Ethiopia is one the countries who has been adopted the legislation in order to reduce road

traffic injuries. However knowing the fact that road traffic injury is one of the top causes of inpatient deaths in most regions of Ethiopia, putting the legislation into practice seems poor.

Data on road traffic injuries have not been well addressed in Ethiopia, and to my knowledge, especially motor cycle related accidents have not been studied so far despite the rapid increase of motor cycle utilization in both urban and rural Ethiopia. Considering helmet use which is one of the five important keys that have been enforced in road safety legislation globally in order to reduce road traffic injuries and deaths; almost nobody uses helmets in the district that I live. For instance: in my family, we are seven in number, and three of them owned motorcycle and use it in daily basis, however none of them have helmet. In general, motorcycle related road traffic safety remains neglected in Ethiopia although there has been progress in adopting helmet legislation globally. Therefore, this study will add knowledge on understanding motorcycle related traffic road accident and related factors. This data can be used by the road safety authorities for planning and evaluating road safety measures and will also contribute to the reduction of mortalities and morbidities and thus to the improvement of public health in Ethiopia.

Not to mention I am from developing country, I am a student and I cannot afford to cover my cost with my salary. Therefore, I would like to apply for the full scholarship. I believe that my topic on road traffic injury could be of interest to you because it will provide crucial data about motorcycle accidents in low-income countries with a high burden of road traffic injuries, and at that to plan intervention and reduce road traffic injuries. The estimated travel budget is Ethiopian Birr 133,247.94 (\$ **6,345.14**).

I hope that you are willing to consider my application.

Sincerely yours,

Meseret M.Bilal

June, 2015

9.2 Weekly PHEM Bulletin SNNPR 2015

1. Data completeness

In Epidemiological week 28/2015, 14 zones(including Hawassa City) and 3 special districts submitted weekly surveillance report to the region. A total of 4648 governmental health facilities were expected to report, however 4254 health facilities have reported to regional PHEM, which totally brings the completeness in to 91.5% (see ,Table9.2.1)

Table9.2.1 The number of sites that expected and reported on time; epidemiological week 28/2015, SNNPR

Indicator	Government			
	H/ Post	H/center	Hospita l	Total
Number of sites that are expect to report	3922	701	25	4648
Number of sites that reported on time	3558	672	24	4254

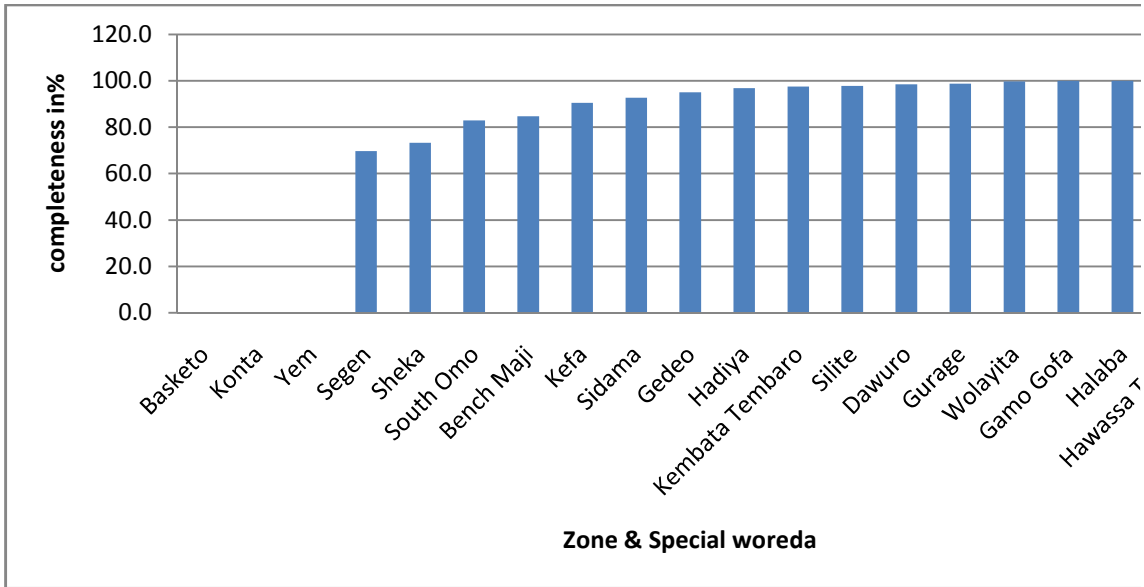
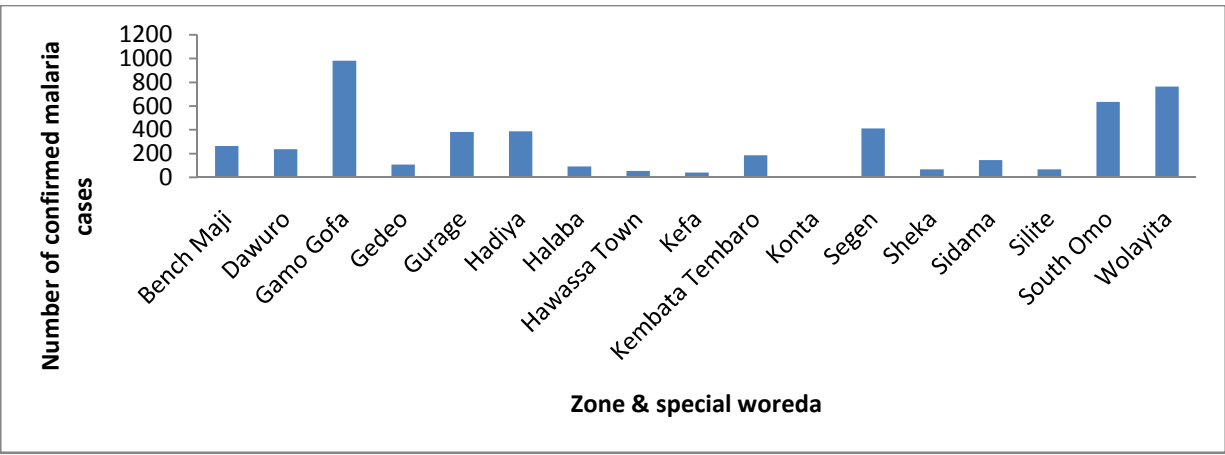


Figure 9.2.1 Showing Report Completeness of zones and Special district of SNNPR, Week 28/2015



3. Measles

There were a total of 42 reported cases of measles with no deaths from Gamo goffa Zone(34) and Halaba special district(6).Prevention and control measures should be strengthened to deal with the problem of persistent cases and spread of Measles outbreaks in the region what was recommended.

4. Meningitis

This week there were a total of 25 reported cases of Meningococcal meningitis with 0 death and all of them were from are inpatient cases.

5.Dysentery

There were a 733 total of reported cases of dysentery of which 722 were outpatient cases and 11 was inpatient case. Prevention and control intervention measures taken should be strengthened.

6. Relapsing Fever

There were a total of 12 reported cases of RF all of them were inpatient cases.

7. Epidemic Typhus

There were a total of 1093 reported cases of which 1092 were outpatient cases and 1 were inpatient cases with no reported death.

8.Typhoid Fever

There were a total of 4962 reported cases of TF of which 4943 were outpatient cases and 19 were inpatient cases with no reported death.

9.Severe acute malnutrition

There were a total of 1213 reported cases of severe acute malnutrition (SAM. Of which 1018 were out-patient and 195 were in-patient cases with 2 death.

10. NNT

There were no reported NNT cases

11. Rabies

There were no reported Rabies cases

12. AFP

There were 2 cases of AFP with no death.

13. Anthrax

In this week there were no reported cases of Anthrax

14. Yellow fever

There was no reported case of yellow fever from any of zones and special woredas of the region.

15. AWD,SARS,Pandemic influenza,Viral Hemorrhagic Fever,Guinea worm and Small pox

There were no reported cases of the above mentioned diseases from any of zones and special districts of the region.

16. Diphtheria

In this week there were no diphtheria

17. Others

There is no any report of other unknown &undefined cases and death reported this week

Annexes

Annex 1 :Questionnaires for Case control study on Measles outbreak in Hulla District

Hello, my name is Meseret Mengesha I work for the Ministry of Health. We are doing an investigation of a measles outbreak. The purpose of these questions is to get information for public health action. Would you be willing to participate?

If YES, ask screening questions. If NO, thank the person for their time (FINISHED).

Date of Data collection -----Data collector Name-----

Zone -----Woreda-----Kebele-----Got-----

I. Socio-demographic Characteristics			
S. No	Questions	Alternatives	Skip
1	What is the name (Id No) of the case or control?	Firstname.....middle name.....last name	
2	How old is (NAME)?	_____months ____ years	
3	What sex is (NAME)?	1.Male 2.Female	
4	Respondent relation to Child?	1.Mother 2.Father 3.Other_____	
5	Marital status of the	1. Single 2. Married	

	respondent?	3. Divorced 4. Widowed 5. Separated	
6	Has (NAME) ever attended school?	<input type="checkbox"/> Yes <input type="checkbox"/> No OR <input type="checkbox"/> Not Applicable - (then go to Q-8)	
7	What is the highest level of education (NAME) has completed? (read answers):	Kg---- Primery----- Secondary-----	
8	When the last time (NAME) went to school?	_____ day _____ weeks _____ months AGO OR DATE: ____/____/____ (Month/ Day/ Year)	
9	What is (NAME)'s ethnicity?	<input type="checkbox"/> Sidama <input type="checkbox"/> Oromo <input type="checkbox"/> Amhara <input type="checkbox"/> Gurage <input type="checkbox"/> Other (specify) _____	
10	What is (NAME)'s religion?	<input type="checkbox"/> Orthodox <input type="checkbox"/> Protestant <input type="checkbox"/> Muslim <input type="checkbox"/> Catholic <input type="checkbox"/> Other_____	
11	Educational level of the mother?	1. Illiterate 2. Read and write 3. Elementary 4. Secondary 5. Above secondary	

12	Educational level of the father?	6. Illiterate 7. Read and write 8. Elementary 9. Secondary 10. Above secondary	
13	Occupation of the mother?	1. Gov't / NGO employee 2. House wife 3. Daily laborer 4. Student 5. Merchant 6. Farmer 7. Unemployed 8. Other (specify)_____	
14	Occupation of the father?	9. Gov't / NGO employee 10. House wife 11. Daily laborer 12. Student 13. Merchant 14. Farmer 15. Unemployed 16. Other (specify)_____	
15	Does your house hold have	1. Electricity? <input type="checkbox"/> Yes <input type="checkbox"/> No 2. A radio? <input type="checkbox"/> Yes <input type="checkbox"/> No 3. A television? <input type="checkbox"/> Yes <input type="checkbox"/> No 4. A mobile telephone? <input type="checkbox"/> Yes <input type="checkbox"/> No	
II. Clinical history			
16	Is there any sick child with rash, fever, running nose/conductivities	1. Yes	

	(illness)?	2.No	
17	What is the date (NAME) first saw a rash on his/her body?	----/-----/-----	
18	What was the symptoms? (multiple answers are possible)	1. Fever 2.cough, 3.coryza (runny nose), 4.and/or conjunctivitis (red eyes) 5. <i>Rash phase</i> 6. <i>Diarrhea</i> 7.Ear discharge 8.Other	
19	Has (NAME) travelled outside of your village (CASES: 2-3 weeks before onset of illness?) (CONTROLS: In the last 2-3 weeks?)	<input type="checkbox"/> Yes, (If yes), District _____ Kebele _____ Got ----- <input type="checkbox"/> No (go to Q-23-)	

		<input type="checkbox"/> Don't know	
20	When (NAME) travelled outside of your village, did (NAME) have contact with anyone sick with measles symptoms?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure	
21	If yes, who did (NAME) have contact with?	Name: _____	
22	Where did (NAME) have contact with this person?	District: _____ Kebele: _____	
23	Have you attended any mass gatherings? (CASES: a week before rash onset) (CONTROLS: in the past 21 days?)	<input type="checkbox"/> Church <input type="checkbox"/> Funeral <input type="checkbox"/> Wedding <input type="checkbox"/> Market <input type="checkbox"/> Any other mass gathering? _____ <i>(if yes, check the box)</i>	
24	Was (name) in their home village (got, kebele) when he/she got ill?	Yes --(if yes go to Q26) No ---(if no go to next Q25)	
25	Where was	Woreda-----	

	(NAME) when the illness started?	Kebele----- Got-----	
26	Did (NAME) visit a health facility for this illness?	<input type="checkbox"/> Yes (date went to facility ___/___/___) <input type="checkbox"/> No	
27	If yes to question number 26 mention the place	_____	
28	How long does it take you to get to a health post?	<input type="checkbox"/> Less than 10 minutes <input type="checkbox"/> 10-30 minutes <input type="checkbox"/> 31 minutes – 1 hour <input type="checkbox"/> More than 1 hour <input type="checkbox"/> More than 2 hours <input type="checkbox"/> Don't know	
29	How long does it take you to get to a health centre?	<input type="checkbox"/> Less than 10 minutes <input type="checkbox"/> 10-30 minutes <input type="checkbox"/> 31 minutes – 1 hour <input type="checkbox"/> More than 1 hour <input type="checkbox"/> More than 2 hours <input type="checkbox"/> Don't know	

32	Was (NAME) admitted to a health facility?	<input type="checkbox"/> Yes --- date admitted: _____/_____/_____ (Month/ Day/ Year) <input type="checkbox"/> No	
33	Did (name) get any treatment at the health facility?	<input type="checkbox"/> Yes (if yes go to Q-34---) <input type="checkbox"/> No (if no 0go to Q--35--)	
34	What were the treatments that given at the health facility?	1.ORS 2.Antibiotics 3.Vitamin A 4.Supplementary food 5.Others given_____	
35	Did (name) visit Traditional Healer	Date of Visits _____ Treatment given_____	
36	Did you give any intervention for sick child at home?	1.Yes 2.No	
37	If yeas to question Q -33, what were the intervention	_____	

	given?		
38	Did (NAME) travel four days prior to or four days after rash onset?	<input type="checkbox"/> Yes (go to Q--39--) <input type="checkbox"/> No (go to Q--40-)	
39	Where did (NAME) travel to after having the rash?	Woreda----- Kebele----- Got-----	
40	Have you had any visitors in your house 4 days before or after onset of rash	<input type="checkbox"/> Yes If yes, who? _____ Where did they come from? Woreda.....kebele..... Got..... <input type="checkbox"/> No	
III. Vaccination History			
41	Did you get vaccinated your Child for measles?	1.Yes 2.No	
42	If yes to question 38 date and Number of vaccine doses received	1.Age of child at first Vaccination _____ 2.Age of child at recent Vaccination_____	

43	What is the common age for a child to be vaccinated with measles vaccine?	1.three month 2.six month 3. nine month 4.other.....specify..... 5. don't know	
44	Can I see (NAME's) immunization card or vaccine certificate?	<input type="checkbox"/> Yes (if yes go to Q.46..) <input type="checkbox"/> No (if no go to Q..45)	
45	Why does (NAME) not have an immunization card or certificate?	<input type="checkbox"/> Never went to get vaccinated <input type="checkbox"/> Got vaccinated but was never given the card <input type="checkbox"/> Lost the card <input type="checkbox"/> Other _____	
46	Measles vaccinations are given in the arm, usually at nine months. Was (NAME) vaccinated against measles, or do you not know?	<i>(if have an immunization card, refer to the card to find out if vaccinated)</i> <input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know	
47	Where did (NAME) get these vaccines? Was it... (READ	<input type="checkbox"/> Routine vaccination at health facility <input type="checkbox"/> Not at a health facility (HEW visit or at a site)	

	ANSWERS)	<input type="checkbox"/> Another way? _____ <input type="checkbox"/> Or did you forget or don't know	
48	The recommended age for vaccination is 9 months. What is the main reason (NAME) was not vaccinated against measles?	<input type="checkbox"/> Clinic was too far <input type="checkbox"/> You were absent during vaccination campaign <input type="checkbox"/> You didn't know it was time for vaccination <input type="checkbox"/> You think the vaccine will hurt the child <input type="checkbox"/> The child is not yet 9 months old <input type="checkbox"/> Other, _____ (specify)	

IV. Risk factors			
49	Had received vitamin A supplementation within 6 months for your child?	1.yes 2.No	
50	Had received deworming within 6 months for your child?	1.yes 2.No	
51	How many months did you feed only breast for your child	_____	
52	When did you start supplementary food for the Child?	_____	

53	List the addition food given for child	<hr/> <hr/>	
v. Attitude and Knowledge			
54	Do you think vaccination can prevent measles disease	1 Yes 2 No	
55	Do you think medical treatment helps measles patient	1 Yes 2 No	
56	Do you believe that the child with rash should get medication	1 Yes 2 No	
57	Do you believe that feeding and extra fluid is important for the child with measles	1 Yes 2 No	
58	MUAC measurement for under five	1. Normal 2.Moderate 3.Severly malnurihed	

Annex:2 Questionnaires for Case - control study on Measles outbreak in Aroresa Woreda, Sidama Zone, and SNNP Region

Hello, my name is -----,I work for the ministry of health. we are doing an investigation of measles outbreak. The purpose of these questions is to get information for public health action. Would you be willing to participate? If yes, ask screening questions. If No ,thank the person for their time.

Case status = Case _____Control_____ date of Data collection_____

Region_____ Zone_____ Woreda_____ Kebele _____ Got _____ Phone_____

Respondent status; 1.case/control 2.Mother 3.Father 4.other

I . Socio-demographic Characteristics

S. No	Questions			Alternatives	
1.1	Sex			1.Male 2.Female	
1.2	Age			years_____ Months_____	
1.3	Occupation	Case/control	Mother	Father	Other

		1. Farmer 2. House wife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't Other (specify)_____	1.Farmer 2.House wif 3.Student 4.Unemployed 5.Daily labore 6.Merchant 7.Gov't 8. Other (specify)_____	1.Farmer 2.House wif 3.Student 4.Unemployed 5.Daily labore 6.Merchant 7.Gov't 8. Other (specify)_____	1.Farmer 2.House wif 3.Student 4.Unemployed 5.Daily labore 6.Merchant 7.Gov't 8. Other (specify)_____
1.4	Educational level	1. Unable to read and write 2. Read and write 4. Elementary 5. Secondary 6. Above secondary	1. Unable to read and write 2. Read and write 3. Elementary 4. Secondary 5. Above secondary	1. Unable to read and write 2. Read and write 3. Elementary 4. Secondary 5. Above secondary	1. Unable to read and write 2. Read and write 3. Elementary 4. Secondary 5. Above secondary
1.5	Marital status	1.Single 2.Married 3.Divorced 4.Widowed 5.Separated	1.Single 2.Married 3.Divorced 4.Widowed 5.Separated	1.Single 2.Married 3.Divorced 4.Widowed 5.Separated	1.Single 2.Married 3.Divorced 4.Widowed 5.Separated
1.6	Family size		_____		
1.7	Is there any sick person with rash, fever, running nose/conductivities (illness)?		1. Yes 2. No		
1.8	If yes, number of sick person		_____		

II. Clinical History of Diseases:

2.1	What was the symptom?	1.fever 2.Rash 3.cough, 4.coryza (runny nose), 5. conjunctivitis (red eyes) 6.Diarrhea 7.Ear discharge 8.Other_____
2.2	Date of rash on set	____ / ____ / ____
2.3	Did you visit health facility	1 Yes 2 no
2.4	If yes to question number 2.3 mention	_____

	the place	
2.5	Date seen at health facility	___ / ___ / ___
2.6	Home Visit by HEW	<u>1</u> yes <u>2</u> no
2.7	Date visited by HEW	___ / ___ / ___
2.8	How long does it take you to get to a health post?	<input type="checkbox"/> Less than 10 minutes <input type="checkbox"/> 10-30 minutes <input type="checkbox"/> 31 minutes – 1 hour <input type="checkbox"/> More than 1 hour <input type="checkbox"/> More than 2 hours <input type="checkbox"/> Don't know
2.9	How long does it take you to get to a health centre?	<input type="checkbox"/> Less than 10 minutes

		<input type="checkbox"/> 10-30 minutes <input type="checkbox"/> 31 minutes – 1 hour <input type="checkbox"/> More than 1 hour <input type="checkbox"/> More than 2 hours <input type="checkbox"/> Don't know
2.10	Was (NAME) admitted to a health facility?	<input type="checkbox"/> Yes --- date admitted: _____/_____/_____ (Month/ Day/ Year) <input type="checkbox"/> No

III. Risk factor

3.1	Did you ever vaccinated for measles?	1.Yes 2.No 3.Unknow 4.Not applicable
3.2	If yes last vaccination date	1.patient recall _____ dd/mm/yy 2. vaccination card _____ dd/mm/yy

3.3	What is the common age for a child to be vaccinated with measles vaccine?	1.three month 2.six month 3. nine month 4.other.....specify..... 5. don't know
3.4	Number of vaccine doses received	1. One dose 2. two dose 3.three and above
3.5	Can I see the Immunization card/certificate?	1 .yes 2 no if the answer is no go to ---
3.6	Why does (NAME) not have an immunization card or certificate?	<input type="checkbox"/> Never went to get vaccinated <input type="checkbox"/> Got vaccinated but was never given the card <input type="checkbox"/> Lost the card <input type="checkbox"/> Other _____
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 If yes with whom _____

3.9	If Yes to question 3.8 place of travel	1.School 2.Neighbor 3.Marke 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, measure MUAC for under five children ,pregnant mother and Lactating mother	1.Normal 2.Moderate 3.Severely malnourished
3.13	Had received vitamin A supplementation within 6 months for your child?	1.yes 2.No
3.14	Had received deworming within 6 months for your child?	1.yes

		2.No	
3.15	How many months did you feed only breast for your child	1 two month 2 three month 3 four month 4 six month 5 other-----	
3.16	Number of rooms your house have	-----	
3.17	Dose each room has window	1.Yes 2.No	
3.18	How often you open the windows	1. Every day 2. Some times	

3.19	Number of persons per sleeping rooms	-----
3.20	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)_____
3.21	How do you think measles can be cured?	1.Using modern medicine 2.Using traditional Medicine 3.Holy water 4.By feeding nutritious foods 1. Keeping the sick person indoor 2. Other(Specify)_____

3.22	Has (NAME) ever attended school?	<input type="checkbox"/> Yes <input type="checkbox"/> No OR <input type="checkbox"/> Not Applicable
------	----------------------------------	--

3.23	What is the highest level of education (NAME) has completed? (read answers):	Kg---- Primary----- Secondary----- Tertiary -----
3.24	When the last time (NAME) went to school?	_____ day _____ weeks _____ months AGO OR DATE: ____/____/____ (Month/ Day/ Year)
3.25	What is (NAME)'s ethnicity?	<input type="checkbox"/> Sidama <input type="checkbox"/> Oromo <input type="checkbox"/> Amhara <input type="checkbox"/> Gurage <input type="checkbox"/> Other (specify) _____
3.26	What is (NAME)'s religion?	<input type="checkbox"/> Orthodox <input type="checkbox"/> Protestant <input type="checkbox"/> Muslim <input type="checkbox"/> Catholic <input type="checkbox"/> Other_____
3.27	Does your household have	5. Electricity? <input type="checkbox"/> Yes <input type="checkbox"/> No 6. A radio? <input type="checkbox"/> Yes <input type="checkbox"/> No 7. A television? <input type="checkbox"/> Yes <input type="checkbox"/> No 8. A mobile telephone? <input type="checkbox"/> Yes <input type="checkbox"/> No
3.28	Has (NAME) travelled outside of your village (CASES: 2-3 weeks before onset of illness?)	<input type="checkbox"/> Yes, (If yes), District _____ Kebele _____ Got -----

	(CONTROLS: In the last 2-3 weeks?)	<input type="checkbox"/> No (go to Q-23-) <input type="checkbox"/> Don't know
3.29	When (NAME) travelled outside of your village, did (NAME) have contact with anyone sick with measles symptoms?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Not sure
3.30	Where did (NAME) have contact with this person?	District: _____ Kebele: _____
3.31	Have you attended any mass gatherings? (CASES: a week before rash onset) (CONTROLS: in the past 21 days?)	<input type="checkbox"/> Church <input type="checkbox"/> Funeral <input type="checkbox"/> Wedding <input type="checkbox"/> Market <input type="checkbox"/> Any other mass gathering? _____ (if yes, check the box)
3.32	Did (name) visit Traditional Healer	No <input type="checkbox"/>
3.33	If yes,	Date of Visits _____ Treatment given _____
3.34	Where did (NAME) get these vaccines? Was it... (READ	<input type="checkbox"/> Routine vaccination at health facility <input type="checkbox"/> Not at a health facility (HEW visit or at a site) <input type="checkbox"/> Another way? _____

	ANSWERS)	<input type="checkbox"/> don't know
3.35	Do you know modes of transmission for measles?	1. Yes 2. No 3. If yes specify _____
3.36	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)
3.37	Do you Know measles is vaccine preventable?	1. Yes 2. No 3. Don't Know
3.38	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 9. Other (specify): _____
3.39	How do you think measles can be cured?	3. Using modern medicine 4. Using traditional Medicine 5. Holy water 6. By feeding nutritious foods 7. Keeping the sick person indoor 6. Other(Specify) _____

Introduction

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health . Data disseminated by a public health surveillance system can be used for immediate public health action, program planning and evaluation, and formulating research hypotheses. For example, data from a public health surveillance system can be used to

- guide immediate action for cases of public health importance;
- measure the burden of a disease (or other health-related event), including changes in related factors, the identification of populations at high risk, and the identification of new or emerging health concerns;
- monitor trends in the burden of a disease (or other health-related event), including the detection of epidemics (outbreaks) and pandemics;
- guide the planning, implementation, and evaluation of programs to prevent and control disease, injury, or adverse exposure; • evaluate public policy;
- detect changes in health practices and the effects of these changes;
- prioritize the allocation of health resources;
- describe the clinical course of disease; and
- provide a basis for epidemiologic research.

Public health surveillance activities are generally authorized by legislators and carried out by public health officials. Public health surveillance systems have been developed to address a range of public health needs. In addition, public health information systems have been defined to include a variety of data sources essential to public health action and are often used for surveillance . These systems vary from a simple system collecting data from a single source, to electronic systems that receive data from many sources in multiple formats, to complex surveys. The number and variety of systems will likely increase with advances in electronic data interchange and integration of data, which will also heighten the importance of patient privacy, data confidentiality, and system security. Appropriate institutions/agencies/scientific officials

should be consulted with any projects regarding public health surveillance. Variety might also increase with the range of health-related events under surveillance. In these guidelines, the term “health-related event” refers to any subject related to a public health surveillance system. For example, a health-related event could include infectious, chronic, or zoonotic diseases; injuries; exposures to toxic substances; health promoting or damaging behaviors; and other surveilled events associated with public health action.

The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively. Public health surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness. The goal of these guidelines is to organize the evaluation of a public health surveillance system. Broad topics are outlined into which program-specific qualities can be integrated. Evaluation of a public health surveillance system focuses on how well the system operates to meet its purpose and objectives. The evaluation of public health surveillance systems should involve an assessment of system attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability. With the continuing advancement of technology and the importance of information architecture and related concerns, inherent in these attributes are certain public health informatics concerns for public health surveillance systems. These concerns include comparable hardware and software, standard user interface, standard data format and coding, appropriate quality checks, and adherence to confidentiality and security standards . Because public health surveillance systems vary in methods, scope, purpose, and objectives, attributes that are important to one system might be less important to another. A public health surveillance system should emphasize those attributes that are most important for the objectives of the system. Efforts to improve certain attributes (e.g., the ability of a public health surveillance system to detect a health-related event [sensitivity]) might detract from other attributes (e.g., simplicity or timeliness). An evaluation of the public health surveillance system must therefore consider those attributes that are of the highest priority for a given system and its objectives.

Rationale of the study

Occurrence of frequent measles outbreaks in the Sidama Zone with measles vaccination coverage of more than 95% for the last three years, and also the Zone have emergency nutrition 13 hot spot districts from this Hulla district is one of the district on priority three emergency nutrition . Frequent measles outbreaks indicate weaknesses in the health system more over this , large discrepancies exist between the regional ,zonal ,district, health center and health posts level measles case and malnutrition cases registered, reported case-based data indicating gaps in reporting and additionally last two years and this year six month aggregated zonal surveillance report timeliness and completeness was below WHO standard 90%(SNNPR PHEM) therefore this measles and malnutrition surveillance system evaluation findings should contribute to improving the surveillance system.

Objective:

General Objective:

To evaluate the surveillance system of measles and Malnutrition in Sidama zone, SNNPR, from February 29,2016 to March 4,2016.

Specific objectives:

- To assess the core activities such as case detection, reporting, data analysis and response surveillance system in Sidama zone.
- -To assess different surveillance system attributes such as simplicity, flexibility, data quality, acceptability, sensitivity, predictive value positive, representativeness, timeliness, and stability
- -To assess supportive activities of surveillance system such as supervision, staff training, information feedback, and financial support.
- To assess documentation system for reported cases
- To identify gaps in the surveillance system and forward recommendations to improve the system

Methods and Materials:

Study setting : This surveillance system evaluation will be undertaken from February 29,2016 to March 4,2016 in Sidama Zone of SNNPR. The zone is selected for its relative high burden of the above selected diseases and recent occurrence of measles and it was also one of the hot spot Zone for acute malnutrition occurrence .

Study Design and participant: A cross-sectional descriptive study will be Used. The study unit will be Zonal health department, one district health office ,two health centers and four health posts.

Sample Size and Sampling:

Zone was selected the relative high burden of the above selected disease for evaluation. The zonal health department, One district health offices, two health centers, four health posts and, totally six health offices/facilities will be included in this evaluation. Selection of the districts and the district health facilities was done recent history of measles outbreak occurrence .

Selection of the districts and the district health facilities was done as in the steps below:

1. From the zone department Hulla district health office were selected by its repeated measles outbreak occurrence and relatively high burden of malnutrition cases.
2. From the district two health centers were selected by which have highly affected kebeles by measles outbreak .
3. From the total health posts under each selected health center, two were selected as above.

Data collection:

Data will be obtained through interviewing PHEM unit Core process owner, officers and health facility surveillance focal persons and HEW using semi structured questionnaire modified from CDC surveillance system evaluation tool will be utilized to collect the data. Reviewing of records such as ,data base ,reporting format, RRT minute book, rumor log book will also used as part of the data collection system.

Ethical issues: Official permission will be obtained from RHB and the respective institutions selected for evaluation .

Data Processing and Analysis tool:

Data will be entered to Excel 2007 and Epi info 7

Tentative Work plan

Serial number	List of activity	February		March				Remark
		Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	
1	Preparation of proposal and Submission							
2	Securing approval							
3	Data collection							
4	Data analysis and compilation							
5	Preparation of draft report							
6	Result interpretation and dissemination							

Questioner for the Zone health department and district office Background

District ----- District Hospital -----

Health center----- Health post-----

Higher level private /NGO clinic ----- Medium level clinic-----

Catchment population ----- Respondent(s)-----

Cell phone no-----

PART ONE

A. Communication and reporting system assessment

1. Which communication material did you have?

- A. E-mail B. wired phone C. mobile
D. radio E. fax F. other-----

2. Did you have address of District health office/ Health Center PHEM officers?

- A. Yes B No

3. How frequently you communicate with the District health office/ Health center PHEM focal/officers on emergencies and other daily activities?

- A. Daily B. weekly C. every 2 week
D. monthly E. quarterly F. every 6 month
G. yearly H. others-----

4. When do you expect the health post to report weekly surveillance data to HC?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

5. When do you expect the health center to report weekly surveillance data to District office?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

6. When do you expect the District health office to report weekly surveillance data to Zone health department?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

7. When do you expect the Zonal health department to report weekly surveillance data to Regional health Bureau?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

8. When do you expect the Regional health Bureau to report weekly surveillance data to Federal?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday

G. Every Sunday

9. How is the Health Bureau communicating the HCs/HPs PHEM officers in case of immediately reportable diseases?

A. by e-mail B. by phone C .by fax

D. regular weekly report E .others

10. Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system? Observe on measles and acute malnutrition .

A. Yes B. No

11. If answer for Q10 is yes to whom did you send? -----

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

1. Is there a national manual or protocol for Measles and Malnutrition surveillance?

A. Yes B. No C. Not applicable

2. Did you have a copy of National Guide line / management protocol for PHEM?

A. Yes B. No C. Not applicable

3. Did you have rumors logbook for PHEM?

A .Yes B. No

4. Was the rumor logbook have been used to document that all reportable events ?

A. Yes B. No

5. Did you have standard case definition for all country priority diseases?(measles, Malaria and Malnutrition) Observe

- A. Yes B. No C. Not applicable

6. Was the case definition posted?

- A . Yes B. No

7. If answer for Q5 is No, for which disease(s) did you lack the case definition?

8. Did you have case based reporting formats for out breaks?

- A. Yes B. No C. Not applicable

9. Was there guide line for specimen collection, handling and transportation to the next level?

- A. Yes B. No C. Not applicable

10. Did you have line list for reporting outbreaks?

- A. Yes B. No C. Not Applicable

11. Do you have EPRP ,Is the plan funded(is there contingency/emergency response fund?

- A. Yes B. No

C. Data analysis, Computer skill and training assessment

1. Had you trained on surveillance system?

- A. Yes B. No

2. If answer for Q1 is yes

- A. when----- - B Topic----- C. For how long? -----

3. Did you give any onsite orientation about surveillance system for District health office coordinator /officers, HC focal/ health workers and HEW ?

A. Yes B. No

4. Was data compiled?

A. Yes B. No

5. Did you have computer?

A. Yes B. No

6. It is functional)?

A. Yes B. No

7. How the data entry and compilation is accomplished?

A. Manual B. Computer C. other-----

8. Did you have computer skill on

A. Ms word / Ms excel B. MS power point C. Epi-info

9. Did you analyze data of the surveillance system?

A. Yes B. No

10. If answer for Q9 is yes, did you describe data by (obs)-----Measles, malnutrition

A. time B. place C. person

11. Did you have denominators for data analysis?

A. total pop ----- B. male ----- C. female -----

D. <5 -----

12. Please indicate the frequency of your data analysis.

- A. weekly B. every two week C. Monthly
D. quarterly E. every 6 month F. annually
G. No regular time

13. Did you notify the results of your analysis to the higher level PHEM? observe weekly buetin

- A. Yes B. No

14. Did you notify the results of your analysis to the lower level PHEM?

- A. Yes B. No

15. Do you have surveillance database /EPHEM/ Functional

- A. Yes B.No

16. Did you start to use e-IDSr software reporting system?

- A. Yes B. No

17. If answer for Q16 is No, what is the reason?

D. Epidemic response and preparedness assessment

1. Did you have plan for epidemic response and preparedness?

- A. Yes B. No

2. Did you have emergency stocks of drugs and supplies?

- A. Yes B. No

14. Who had the authority to mobilize the emergency finance?

- A. Health Bureau head B. PHEM case team leader C. PHEM officer
D. other-----

15. Had you a car assigned for emergencies (PHEM)?

- A. Yes B. No C. Not applicable

16. If answer for Q15 is NO, how did you address emergencies? -----

E. Outbreak investigation and case confirmation assessment

1. Had you investigated any outbreak in 2007 and the first two quarter 2008 EFY?

- A. Yes B. No , list if any

2. Did you have outbreak investigation check list? Obs

- A. Yes B. No

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

4. Where was laboratory confirmation of cases?

- A. regional lab B. Hospital C. EHNRI
D. HC E. other-----

5. Who was responsible to investigate an outbreak?

- A. RRT B. HEWs C. Health Bureau staffs
D. experts organized randomly E. health facility staffs
F. other-----

6. Had you faced any challenge in outbreak investigation in 2007-2008 EFY?

A. Yes

B. No

7. If answer for Q6 is yes,

a) List the challenges

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

F. Supervision and feedback assessment

1. Did you have supervision plan in 2007-2008 EFY?

A .Yes

B .No

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

3. If for Q1 is yes, did you supervise the HCs and HPs according to your plan in 2007-2008 EFY?

A. Yes

B. No

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

14. Had you received feedback from higher level supervisors in 2007 and 2008 EFY?

A .Yes

B. No

15. If answer for Q14 is yes how many feedbacks did you received in 2007 and 2008 EFY?

16. Had you faced any challenge on supervision and feedback in 2007 and 2008 EFY?

A. Yes

B. No

G .System Structure and function

1. Is there PHEM structure has adequate staff in your office?

A. Yes

B. No

2.If yes is there assigned /employed permanently or delegated temporarily?

A. permanently

B. delegated temporarily

3. How many experts are working on PHEM ? expected Vs assigned

4.If no why staffs are not assigned?

PART-TWO

IS THE SURVEILLANCE SYSTEM HELP?

1. To detect outbreaks early on time to permit accurate diagnosis?

A. Yes

B. No

2. To estimate the magnitude of morbidity and mortality?

A. Yes

B. No

3. Permit assessment of the effect of prevention and control programs?

A. Yes

B. No

4. To estimate research intended to lead to prevention and control?

A. Yes

B. No

Describe Each System Attributes:

I. Simplicity:

1. Is the case definition easy for case detection by all level health professionals?

A. Yes

B. No

2. Does the surveillance system allow all levels of professionals to fill data?

A. Yes

B. No

3. Does the surveillance system help to record and report data on time?

A. Yes

B. No

4. Does the surveillance system have necessary information for investigation?

A. Yes

B. No

5. Does the surveillance system allow updating data on the cases?

A. Yes

B. No

6. How long does it take to fill the format?

A. <5 min

B. 5 to 10 min

C. 10 to 15 min

D. >15 min

3. Percentage of unknown or blank responses to variables from the total reports of 2007 and 2008 EFY report--

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

5. Is the recorded data clear to read and understand?

A. Yes

B. No

6. If answer for Q5 is No, how many records are not clear/are difficult to understand in 2007 EFY report?

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

IV. Acceptability

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

A. Yes

B. No

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

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

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

B) No feedback / or recognition given by the higher bodies for their contribution

C) Reporting formats are difficult to understand

D) Report formats are time consuming

1. Are all reporting sites reporting on time?

- A. Yes B. No

2. Percent of reporting sites that report on time. -----

VII. Completeness

1. Are all reporting sites reporting?

- A. Yes B. No

2. Percent of Health centers & Health posts that send report of each week in 2007 & 2008 EFY.

VIII. Stability

1. Was any new restructuring affected the procedures and activities of the surveillance?

- A. Yes B. No

2. Was there lack of resources that interrupt the surveillance system?

- A. Yes B. No

3. Was there any time /condition in which the surveillance is not fully operating?

- A. Yes B. No

4. If the answer for Q3 is yes, explain why?

QUESTIONNAIRE FOR THE HEALTH CENTER BACKGROUND:

District _____ Health center _____ Catchment population _____
Respondent(s) _____
Address: Office no _____
Cell phone no _____ e-mail _____

PART ONE:

A. Communication and reporting system assessment

1. Which communication material did you have?

- A. E-mail B. wired phone C. mobile
D. radio E. fax F. other-----

2. Did you have address of Health Bureau PHEM officers?

- A. Yes B. No

3. How frequently you communicate with the Health Bureau PHEM officers on emergencies and other daily activities?

- A. Daily B. weekly C. every 2 week
D. monthly E. quarterly F. every 6 month
G. yearly H. others-----

4. Did you have address of HP HEWs?

- A. Yes B. No

5. How frequently you communicate with the HP HEWs on emergencies and other daily activities?

- A. daily B. weekly C. every 2 week

- D. monthly
- E. quarterly
- F. every 6 month
- G. yearly
- H. others-----

6. When do you expect the health post is report weekly surveillance data to HC?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

7. When do you expect the health center is report weekly surveillance data to District office?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

8. When do you expect the District health office is report weekly surveillance data to Zone health department?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

9. When do you expect the Zonal health department is report weekly surveillance data to Regional health Bureau?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

10. When do you expect the Regional health Bureau is report weekly surveillance data to Federal?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

11. How is the Health Center communicating the HPs HEWs in case of immediately reportable diseases?

- A. by e-mail
- B. by phone
- C. by fax
- D. regular weekly report
- E. others

12. Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system?

- A. Yes
- B. No

13. If answer for Q12 is yes to whom did you send?

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

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

1. Is there a national manual or protocol for Measles and Malnutrition surveillance?

A. Yes B. No C. Not applicable

2. Did you have a copy of National Guide line / management protocol for PHEM?

A. Yes B. No C. Not applicable

3. Did you have rumors logbook for PHEM?

A .Yes B. No

4. Was the rumor logbook have been used to document that all reportable events ?

A. Yes B. No

5. Did you have standard case definition for all country priority diseases?(measles, Malaria and Malnutrition) Observe

A. Yes B. No C. Not applicable

6. Was the case definition posted?

A . Yes B. No

7. If answer for Q5 is No, for which disease(s) did you lack the case definition?

8. Did you have case based reporting formats for out breaks?

A. Yes B. No C. Not applicable

9. Was there guide line for specimen collection, handling and transportation to the next level?

A. Yes B. No C. Not applicable

10. Did you have line list for reporting outbreaks?

A. Yes B. No C. Not Applicable

11. Do you have EPRP ,Is the plan funded(is there contingency/emergency response fund?

A. Yes B. No

C .Data analysis, Computer skill and training assessment

1. Had you trained on surveillance system?

A. Yes B. No

16. If answer for Q1 is yes

A. when-----? B. Topic-----? C. For how long? -----

2. Did you give any onsite orientation about surveillance system for HC and HP PHEM focal persons?

A. Yes B. No

3. Was data compiled?

A. Yes B. No

4. Did you have computer?

- A. Yes B. No

5. It is functional)?

- A. Yes B. No

6. How the data entry and compilation is accomplished?

- A. Manual B. Computer C. other-----

7. Did you have computer skill on

- A. Ms word B. Ms excel C. MS power point
D. Epi-info

8. Did you analyze data of the surveillance system?

- A. Yes B. No

9. If answer for Q9 is yes, did you describe data by Obs

- A. time B. place C. person

10. Did you have denominators for data analysis?

- A. total pop B. male C. female
D. <5

11. Please indicate the frequency of your data analysis.

- A. weekly B. every two week C. Monthly
D. quarterly E. every 6 month F. annually
G. No regular time

12. Did you notify the results of your analysis to the higher level PHEM?

- A. Yes B. No

13. Did you notify the results of your analysis to the lower level PHEM?

- A. Yes B. No

D .Epidemic response and preparedness assessment

1. Did you have plan for epidemic response and preparedness?

- A. Yes B. No

2. Did you have emergency stocks of drugs and supplies?

- A. Yes B. No

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

4. Had you experienced shortage of drugs, vaccines and supplies in 2007 & 2008 EFY?

- A. Yes B. No

5. Was an epidemic management committee built in your office?

- A. Yes B. No C. Not Applicable

6. Did the epidemic management committee have regularly scheduled meeting time?

- A. Yes B. No

7. Was Rapid response team (RRT) built in your office?

- A. Yes B. No C. Not Applicable

8. Did the RRT have regularly scheduled meeting time during epidemics?

- A. Yes B. No

9. Did you have case management protocol for epidemic prone diseases?

- A. Yes B. No C. Not Applicable

10. Did your PHEM have multi sectoral emergency preparedness and response task force?

- A. Yes B. No C. Not Applicable

11. Were partners working together with your office on emergencies?

- A. Yes B. No

12. If answer for Q11 is yes, what type of supports did they give to your office?

13. Was there a budget for epidemic response?

- A. Yes B. No

14. Who had the authority to mobilize the emergency finance?

- A. Health center head B. experts C. other-----

15. Had you a car assigned for emergencies (PHEM)?

- A. Yes B. No C. Not applicable

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

E .Outbreak investigation and case confirmation assessment

1. Had you investigated any outbreak in 2007 & 2008 EFY?

- A. Yes B. No , list if any

2. Did you have outbreak investigation check list?

- A. Yes B. No

11. Did you send feedback of your supervision to the health posts commenting/indicating their strong and weak sides?

A. Yes

B. No

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

13. If answer for Q11 is yes, for how many HPs did you send a feedback in 2007& 2008 EFY_____

14. Had you received feedback from higher level supervisors in 2007&2008 EFY?

A. Yes B. No

15. If answer for Q14 is yes how many feedbacks did you received in 2007&2008 EFY?

16. Had you faced any challenge on supervision and feedback in 2007&2008 EFY?

A. Yes B. No

PART-TWO

IS THE SURVEILLANCE SYSTEM HELP?

1. To detect outbreaks early on time to permit accurate diagnosis?

A. Yes

B. No

2. To estimate the magnitude of morbidity and mortality?

A. Yes

B. No

3. Permit assessment of the effect of prevention and control programs?

A. Yes

B. No

4. To estimate research intended to lead to prevention and control?

A. Yes

B. No Describe

Each System Attributes:

1. Simplicity:

1. Is the case definition easy for case detection by all level health professionals?

A. Yes

B. No

2. Does the surveillance system allow all levels of professionals to fill data?

A. Yes

B. No

3. Does the surveillance system help to record and report data on time?

A. Yes

B. No

4. Does the surveillance system have necessary information for investigation?

A. Yes

B. No

5. Does the surveillance system allow updating data on the cases?

A. Yes

B. No

6. How long does it take to fill the format?

A. <5 min

B. 5 to 10 min

C. 10 to 15 min

D. >15 min

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

3. Percentage of unknown or blank responses to variables from the total reports of 2007&2008 EFY report

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

5. Is the recorded data clear to read and understand?

A. Yes

B. No

6. If answer for Q5 is No, how many records are not clear/are difficult to understand in 2007&2008 EFY report?

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

4. Acceptability

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

A. Yes

B. No

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

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

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

B. No feedback / or recognition given by the higher bodies for their contribution

C. Reporting formats are difficult to understand

D. Report formats are time consuming

E. Other: -----

4. Were all participants using the standard case definition to identify cases?

A. Yes

B. No

5. Were all the reporting agents send their report using the current and appropriate surveillance reporting format?

A. Yes

B. No

6. Were all the health professionals aware about the surveillance system?

A. Yes

B. No

7. Was all PHEM officers send report on time?

A. Yes

B. No

5. Representativeness

1. Was the surveillance system enabled to follow the health and health related events in the whole community?

A. Yes

B. No

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

A. The urban

B. the rural

C. both

3. Was there any time /condition in which the surveillance is not fully operating?

- A. Yes B. No

4. If the answer for Q3 is yes, explain why?

QUESTIONNAIRE FOR THE HEALTH POST BACKGROUND:

Health center _____ Health Post _____ Catchment
population _____ Respondent(s)

Address: Office no
_____ Cell phone no _____ e-mail _____

PART ONE:

A .Communication and reporting system assessment

1. Which communication material did you have?

- A. E-mail B. wired phone C. mobile
D. radio E. fax F. other-----

2. Did you have address of Health center PHEM officers?

- A. Yes B. No

3. How frequently you communicate with the Health center PHEM officers on emergencies and other daily activities?

- A. Daily B. weekly C. every 2 week
D. monthly E. quarterly F. every 6 month
G. yearly H. others-----

4. When do you expect the health post is report weekly surveillance data to HC?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

5. When do you expect the health center is report weekly surveillance data to District office?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

6. When do you expect the District health office is report weekly surveillance data to Zone health department?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

7. When do you expect the Zonal health department is report weekly surveillance data to Regional health Bureau?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

8. When do you expect the Regional health Bureau is report weekly surveillance data to Federal?

- A. Every Monday
- B. Every Tuesday
- C. Every Wednesday
- D. Every Thursday
- E. Every Friday
- F. Every Saturday
- G. Every Sunday

9. How is the Health post communicating the HCs PHEM officers in case of immediately reportable diseases?

- A. by e-mail B. by phone C. by fax
D. regular weekly report E. others

10. Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system?

- A. Yes B. No

11. If answer for Q10 is yes to whom did you send?

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

1. Did you have National Guide line for PHEM?

- A. Yes B. No C. Not Applicable

2. Did you have standard case definition for all country priority diseases?

- A. Yes B. No C. NA

3. Was the case definition posted?

- A. Yes B. No

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

5. Did you have case based reporting formats for out breaks?

- A. Yes B. No C. NA

4. To estimate research intended to lead to prevention and control?

A. Yes

B. No

Describe Each System Attributes:

1. Simplicity:

1. Is the case definition easy for case detection by all level health professionals?

A. Yes

B. No

2. Does the surveillance system allow all levels of professionals to fill data?

A. Yes

B. No

3. Does the surveillance system help to record and report data on time?

A. Yes

B. No

4. Does the surveillance system have necessary information for investigation?

A. Yes

B. No

5. Does the surveillance system allow updating data on the cases?

A. Yes

B. No

6. How long does it take to fill the format?

A. <5 min

B. 5 to 10 min

C. 10 to 15 min

D. >15 min

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

4. Were all participants using the standard case definition to identify cases?

A. Yes

B. No

5. Were all the reporting agents send their report using the current and appropriate surveillance reporting format?

A. Yes

B. No

6. Were all the HEWs& health professionals aware about the surveillance system?

A. Yes

B. No

7. Was HEWs send report on time?

A. Yes

B. No

5. Representativeness

1. Was the surveillance system enabled to follow the health and health related events in the whole community?

A. Yes

B. No

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

A. The urban

B. the rural

C. both

3. Are all the Socio demographic variables included in the surveillance reporting format?

A. Yes

B. No

4. If the answer for Q3 is No, which is less represented?

A. Sex

B. age group

C. ethnic group

D. religion

Introduction

Health profile is a collection, organizing and summarizing of information about the characteristics of community, the health resource within the community, the community's perceptions of health and to describe health and others health related conditions, demographic, socio-economic, political, cultural and others aspect of a particular geographic areas of interest. This health profile assessment is both a process and a product. It is a process of gathering and interpreting information from multiple and diverse sources in order to develop a deep understanding of the health of a community. It is also a product that uses these results to develop strategies to improve the health status of the community.

The health profile provides summary health information to support local authority members, officers and community partners to lead for health improvement. It also help to improve availability and accessibility for health and health related information in country.

Factual information helps us to achieve our mission of working together to promote and improve the health of individuals, families and communities, It helps us to identify health issues and priorities in the community.

Its purpose is to promote evidence-based health policymaking through a comprehensive and rigorous analysis of the dynamics of health situations and health systems in the district. Therefore, the main objectives of this document are to present compiled information concerning physical and socio-economic condition of the district and its health profile constraints.

The main sources of data used for the preparation of the document are Boricha district administration, Agriculture, Health, Educational, Water Resource, culture and tourism, and energy office and Finance office. The document covers almost the data and activities of the period 2014-2015, and all the years are according to the Gregorian calendar.

The health profile will be designed to help local government and health services make decisions and plans to improve local people's health and reduce health inequalities, the profiles present a set of important health indicators that show how the area compares to the national average. The indicators are carefully selected each year to reflect important public health topics

2.Objectives

2.1General objective

- To develop district health profile for Boricha district in Sidama zone

2.2 Specific objectives

- To assess the health indicators of the district and others health related condition of the district.
- To describe district health status, and to identify problems for priority setting.
- To determine disease burden and communicate health and others health related information .
- To assess human resources of the district

3 Methodology

3.1Study Area

Health profile description will be conducted in Boricha district which is one of district of Sidama zone

3.2 Study Period

All required data of last year (2014 G.C) will be collected, analyzed and interpreted from Feb 12, 2015to February 22/2015.

3.3 Study Design

- Descriptive cross-sectional study will be conducted using the standard questionnaire.
- Review Hard copy and softcopy of available data in health offices , health institution, Finance, Education, Agriculture, Culture & Tourism, Water... In addition, interviewing and discussion with concerned body will also be conducted.
- Review of publications and literatures about the area.
- The findings will be communicated to Boricha district health office and stakeholders

3.4 Data collection methods

Health and others health related data of last year (2014GC) will be collected and reviewed from district health office, education office, water & energy office, district administrative office, Culture and tourism office and different literature and publications to incorporate other un available information.

3.5 Data analysis procedures

Data will be processed and analyzed by using Epi Info 7.1.0.6 and Microsoft Office Excel 2007 to organize and analyze the data appropriately.

4. Tentative work plan

Serial number	List of activities	March		April				Remarks
		Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	
1	Preparation of proposal and Submission							Out-break investigation will be done at any time and the schedule will be changed.
3	Traveling to Boricha woreda and Obtaining permission from offices for data collection							
4	Data collection							

5	Data analysis and compilation						
6	Preparation of draft report						
7	Result interpretation and dissemination						

5. Work budget

S.n	Activities	unit	Quantity	Unit cost		Total price	
				<u>birr</u>	<u>cent</u>	<u>birr</u>	cent
<u>1</u>							
<u>2</u>							
<u>2.1</u>							
<u>2.2</u>							
<u>total</u>							

6. Dummy table

Table1: Population distribution by Kebeles in 2014 population estimation in Boricha district, Sidama zone

Sr.No	Name of Kebeles	Male	Female	Total Population	Total Households
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					

22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
36					
37					
38					
39					
40					
41					

42					
----	--	--	--	--	--

Table -2:-Shows 2014 population distribution by age of Boricha districts, Sidama, Zone

Age group	Male	Female	Total	Percent (%)
0-4				
5-9				
10--14				
15--19				
20--24				
25--29				
30—34				
35—39				
40—44				
45—49				
50—54				
55—59				
60—64				
65+				
Total				

Table-3:-Distribution of schools, teachers and students in Boricha district 2014.

Grade	N ^o schools	Type	No or teachers				No of students		
			TTI	Dip	Dig	Total	M	F	Total
1-4									
5-8									
9-10									
Total									

Source: - _____

Table-4 Utilization and distribution of energy in Boricha district , 2014.

Electric power user kebeles				Solar energy power users	
S.N	Urban	S.N	Rural	S.N	Rural
1		1		1	
2		2		2	
3		3		3	
4		4		4	
5		5		5	
6		6		6	

Table-5: Types of health facility which is found in Boricha district , 2014

S/N	TYPE		NUMBER		REMARK
			Governmental	Private	
1	Hospital				
2	Health Center				
3	Health posts (HPs)				
4	Health posts (HPs)				
5	Pharmacy				
6	Drug stores				
7	Rural drug venders				
8	Clinics	Small			
		Medium			
		Higher			
Total					

Table-6: Distribution of vital statistics in Boricha district, Sidama zone , 2014.

S/N	INDICATORS	Number	Percent (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			

Table 7. Immunization coverage

Name of kebeles	Antigens					
	BCG	Measles	Penta-1	Penta-3	Fully	PAB

Table-7: Top ten causes of Adult outpatients department visit in Boricha district, Sidama zone 2014.

Sr/No	Type of Disease	Number of cases	Percent (%)
1			
2			
3			
4			
5			
6			

7			
8			
9			
10			
	Total		

Source: - _____

Table-8: Top ten causes of inpatients/admissions in pediatrics, Boricha district Sidama zone, 2013.

S/N	Type of Disease	Number cases	Percent (%)
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			
	Total		

Source:- _____

Table-9: Human resource working under Boricha district Sidama, 2014.

S/N	Category	Gov.	Non-Gov.	Total	Remarks
1	Physicians				
2	Health officers				
3	Nurses				
4	Lab. Technician				
5	Pharmacy				
6	Env. health				

7	HEWS				
8	Others(TTBA,CHB& CHP)				
Total					

TTBA=training traditional birth attendance, CHA=community health agency,

CHP=community health promoters

1: Data collection tools

1. Historical Aspects of the area (Culture & Truism office).

- 1.1. Woreda at a glance: where it is _____
- 1.2. The name (how& why) _____
- 1.3. How the woreda was formed _____
- 1.4. Any other historical aspect _____

2. Geography and Climate (including map, altitudes,

agro ecological zones etc...)

- 2.1. Woreda map _____
- 2.2. Location (distance and direction) from the capital city Hawassa _____

- 2.3. Altitude _____
- 2.4. Annual rain fall (average) _____ Max _____ Min _____
- 2.5. Annual temp(average) _____ High _____ Low _____
- 2.6. Climatic zones Highland _____% Midland _____% Lowland _____%
- 2.7. Accessibility to main roads _____
- 2.8. Accessibility Health facility to woreda office-----

3. Administrative setup

- 3.1. Total no. of kebeles: _____ Rural _____ Urban _____
- 3.2. Woreda boundaries North _____ South _____
East _____ West _____

4. Demographic information

- 4.1. Population: Total _____ urban _____ .rural _____
- 4.2. Male Popn _____ Female Popn _____ sex ratio _____

4.3.< 1yrs_____, < 5 yrs_____, < 15 years_____, >64 years_____,
Women 15-49 yrs of age_____.

4.4.Total population by kebele (each kebele pop)_____Ethnic composition/language

4.5.Total house hold.....

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

5.1. Main source of the economy_____

5.1.1. Land density _____

5.1.2. Cultivated _____

5.1.3. Farming _____

5.1.4. Grazing _____

5.1.5. Main crops _____, _____, _____,

5.1.6. Fertilizer utilization _____

5.2.House hold income source(average)

5.2.1. Agriculture_____ (No.)

5.2.2. Different business_____(No.)

5.2.3. Employee_____ (No.)

5.2.4. Jobless _____(No.)

5.2.5. Average income per HH/year_____

6. Education and school Health

6.1.Distribution of Schools:

6.1.1. Primary (1-8) ____1st Cycle(1-4)_____ 2ndCycle (5-8)____

6.1.2. Secondary (9-10)_____

6.1.3. Preparatory schools (11-12)_____ ,

6.1.4. TVET/colleges_____

6.1.5. K.G _____

6.2.Educational status of the community

6.2.1. Total School Age Children (target)_____

6.2.2. Total Enrolment _____(_____%)

6.2.3. School dropout in 6 months or year 2004 _____

6.2.4. If there is school dropout ,why _____

6.2.5. Total Educated people as a whole, _____ Male _____ Female

6.3.School health activities:

6.3.1. Water supply: schools with water supply_____

6.3.2. Toilets: schools with functional latrines (Male& Female)_____

6.3.3. School latrine hygiene.....

6.3.4. School with wash committee members and their contribution to water and sanitation hygiene.....

6.3.5. Schools with HIV/other Health clubs_____

7. Facilities (Transport, Telecommunication, Power supply, Water supply...)

7.1. How many of the **health posts** have access to transportation_____ (_____%) ,
Telecommunication_____ (_____%) ,Electric
power_____ (_____%) ,Water supply _____ (_____%)

7.2. How many of the **health centers** have access to transportation_____ (_____%) ,
Telecommunication_____ (_____%) ,Electric
power_____ (_____%) ,Water supply _____ (_____%)

8. Health delivery system(District Health Structure/organogram)

8.1. Health Facility

Type	Number	Total No. of beds
Hospital		

Health center		
Private HF's(clinics/diag.lab/drug stores)		
Health posts		

8.2. Health institution to pop ratio:

8.3. Hospital: Pop _____. HC: Pop _____ HP: Pop _____

8.4. Health service coverage _____

8.5. Human resource for health (all type)

Type	No.	Remark
Physicians		
Health officers		
Nurses		
Lab.		
Pharmacy		
Env. Health		
HEWS		
others		

Doctor: pop ratio _____, Nurse: pop ratio _____ HEW: pop ratio _____

8.6. Top causes of morbidity and mortality

8.6.1. **Top ten leading causes of OPD visit (morbidity):**

Adult		Pediatrics
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

8.6.2. Top ten causes of admissions

Adult		Pediatrics
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

8.6.3. Top ten causes of deaths (mortality).

Adult		Pediatrics
1		
2		
3		
4		
5		

6		
7		
8		
9		
10		

8.7. Vital Statistics and Health Indicators

- 8.7.1. Infant Mortality Rate (IMR) _____(total <1 yr deaths in 2006 yr_____)
- 8.7.2. PMR_____ (The last year 2006yr)
- 8.7.3. Total live births_____
- 8.7.4. Total still births_____
- 8.7.5. Total neonatal deaths_____
- 8.7.6. Child Mortality Rate _____(total <15 yr deaths in 2006 yr_____)
- 8.7.7. Crude Birth Rate_____
- 8.7.8. Crude Death Rate_____ (total deaths 2006 yr_____)
- 8.7.9. Maternal Mortality Rate_____ (total maternal deaths in 2006_____)
- 8.7.10. Contraceptive Prevalence rate_____
- 8.7.11. Contraceptive acceptance rate _____
- 8.7.12. ANC rate (how many of the total expected pregnancies attended 1st ANC)

- 8.7.13. ANC rate (how many of the total expected pregnancies attended 4th ANC)

- 8.7.14. Percentage of deliveries attended by skilled birth attendants_____
- 8.7.15. Percentage of deliveries attended by HEWs_____
- 8.7.16. Percentage of deliveries attended by TBA _____

9. Immunization Coverage (for children); Under one year

- 9.1. BCG _____

- 9.2. OPV-0 _____ OPV -1 _____ OPV-3 _____
- 9.3. Penta-1 _____ Penta-3 _____
- 9.4. PCV₁₀ -1 _____ PCV₁₀ -3 _____
- 9.5. Measles _____
- 9.6. Fully immunized _____
- 9.7. PW TT2+ _____, NPW TT2+ _____
- 9.8. Woreda's Immunization activities, cold chain system ,challenges ,shortage of vaccines

.....

10. Health budget allocation:

10.1. Government

10.1.1. Total budget allocated for the district _____

10.1.2. Total budget allocated for health _____ (____%)

10.2. Funds from NGO

10.2.1. Total _____ (purpose/programs) _____

11. Disaster situation in the woreda

11.1. Was there any disaster in the woreda in the last one year? _____

11.2. Any recent disease outbreak/other public health emergency _____

11.3. If yes, cases _____ and deaths _____

11.4. Which kebele affected.....

11.5. When was it happen.....

11.6. Attack rate of the outbreak.....

11.7. Case fatality rate.....

12. Community Health Services:

12.1. Status of services provided by community health workers namely

12.1.1. No. of TBAs/TTBA _____ and their responsibility

12.1.2. No. of CHWs/CHPs _____ and their responsibility

12.1.3. Responsibility _____ of
HEWs _____

12.1.4. Others _____

12.2. Status of Primary Health Care Components – with focus on the eight PHC elements

12.2.1. MCH(Delivery, _____ ANC, _____ PNC
) _____

12.2.2. FP(Methods)

12.2.3. EPI(_____ outreach _____ service, _____ cold _____ chain,
vaccine) _____

12.3. Environmental Health, Sanitation Hygiene . (WASH)

12.3.1. Latrine coverage _____ (_____ %) & utilization rate _____ (_____ %)

12.3.2. Total safe water supply coverage _____ (_____ %)

12.3.3. Safe water supply coverage by kebele with its popn

12.3.4. Main source of water supply _____

12.3.5. Others _____

12.4. Health education _____

13. Endemic diseases ; (in No & % for all questions)

13.1. Malaria:

13.1.1. Total malarious kebeles _____

13.1.2. Pop at risk _____

13.1.3. ITNs coverage (including current distribution) _____

13.1.4. Is there IRS this year (No of kebeles) _____

13.1.5. If yes, No of kebeles undertaking IRS _____

13.1.6. Population covered _____

13.1.7. HHs covered _____

13.1.8. Total malaria cases/yr _____ Deaths/yr _____,

- 13.1.9. <5yr cases _____ deaths _____
- 13.1.10. Malaria supplies (Coartem, RDT, etc) shortage _____(month)
- 13.1.11. If, Other issues _____

13.2. TB/Leprosy

- 13.2.1. Total TB cases _____
- 13.2.2. PTB negative _____
- 13.2.3. PTB positive _____
- 13.2.4. Extra PTB _____
- 13.2.5. TB detection rate _____
- 13.2.6. TB Rx completion rate _____
- 13.2.7. TB cure rate _____
- 13.2.8. TB Rx success rate _____
- 13.2.9. TB defaulter _____
- 13.2.10. Death on TB Rx _____
- 13.2.11. Total TB patients screened for HIV _____
- 13.2.12. Total Leprosy cases _____ on Rx _____

13.3. HIV/AIDS;

- 13.3.1. Total people screened for HIV (last one year) _____
- 13.3.2. VCT _____
- 13.3.3. PITC _____
- 13.3.4. PMTCT _____
- 13.3.5. HIV prevalence _____
- 13.3.6. HIV Incidence (new cases/yr) _____
- 13.3.7. Total PLWHA _____
- 13.3.8. On ART _____
- 13.3.9. On Pre-ART _____
- 13.3.10. Other HIV prevention activities _____

13.4. Nutrition (malnutrition related OTPs, SC,TSF, CBN and PSNP activities)/HO & Early warning

- 13.5. Total OTP sites _____,
- 13.6. Total admissions to OTP/yr _____

13.7. Total SC sites, _____

13.8. Newly opened/yr _____

13.9. Total admissions to SC/yr _____

13.10. Is there TSF (Targeted Supplementary Feeding) program in the woreda? _____

13.11. If yes children in the program, _____ (No & %)

13.12. CBN program _____

13.13. If yes children in the program, _____ (No & %)

13.14. PSNP _____ other _____

13.15. If yes children in the program, _____ (No & %)

13.16. General _____ food _____ security
condition _____

_____.

13.17. Shortage _____ of _____ Essential _____ drugs

_____.

13.18. What do you think the major Health problem/s of the
woreda? _____

Annex 5 : Questionnaires for Descriptive study on Earthquake Related Injuries in Hawassa town , Sidama Zone, and SNNP Region

Hello, my name is -----,I work for the ministry of health. we are doing an investigation of Earthquake Related Injuries.The purpose of these questions is to get information for public health action. Would you be willing to participate? If yes, ask screening questions. If No ,thank the person for their time.

Date of Data collection_____

Region_____ Zone_____ Town_____ Kifle ketema -----Kebele _____
Phone_____

Source of information 1.case 2.relative/family 3.from OPD/IP Register/patient car

Ser No	Questions	Alternatives
1	Sex	1.Male 2.Female
2	Age	1.In Year..... 2.In Month.....
3	Occupation	1.Farmer 2.House wif 3.Student

		<ul style="list-style-type: none"> 4.Unemployed 5.Daily labore 6.Merchant 7.Gov't 8. Other
4	Marital status	<ul style="list-style-type: none"> 1.Single 2.Married 3.Divorced 4.Widowed 5.Separated
5	Case	<ul style="list-style-type: none"> 1. Admitted(IP) 2. Out patient(OPD)
6	Length of stay at Hospital	<ul style="list-style-type: none"> 1.one to two day 2.three to six day 3.one week 4. more than one week
7	Out come	<ul style="list-style-type: none"> 1.On treatment 2.Transfer to other facility for further investigation and treatment 3.Died
8	Time of events happen	<ul style="list-style-type: none"> 1. Day time 2. At night

9	At the time of main Shock / after shock	1. at home 2.at school 3.at office/working place 4.at campus dormitory 5.at campus library 6.other specify.....
10	Location during the event	1.Indoors 2.Outdoors
11	Type of buliding	1. Ground 0 2.Floor one 3.Floor two 4.Floor three 5.Floor four 6.Floor five and above
12	Cause of injury	1.Due to main shock 2.Due to after shock
13	Injury occurred	1.Due to direct cause of the earthquake 2. Due to indirect cause of the earthquake
14	Injury mechanism	1.Hit/trapped by object 2.burn/scalds 3.Fall/slip 4.cuting /piercing

		5.injury during rescue
15	Type of injury	1.Multipl injury 2.Single injury
16	Body region injured	1.Head 2.Neck 3.Thorax 4.Abdomen 5.Lower back 6.Pelvis 7.Shoulder upper arm and Upper extremity 8.Elbow,forearm 9.Wrist,hand 10.Hip,thigh 11.Knee,lower leg 12.Ankle,foot
17	Anatomical location of Fracture	1.Ankle 2.Tibia/Fibula 3.Femur 4.Pelvic girdle 4.Wrist 5.Radius/ Ulnar 6.Humours 7.Clavicle 8.Vertebraal column
18	Diagnosis of Fracture	1.Soft tissue injury 2.Contusion/laceration

		3.Crush injury 4.Burns/Scalds 5.Closed injury 6.Dislocation
19	Injury degree	1.Intact on the whole 2.Slightly injured 3.Moderately injured 4.Serously injured 5.Dying/Dead
20	Surgical procedure for injured patient	1.Surgeries were done 2.Debridement 3.Internal fixation 4.External fixation

Annex 6: Interview using unstructured questionnaire about the cold chain management, EPI coverage, reporting system and EPI data quality of the Hulla and Aroresa district

TOR

- 1 Review report form in woreda health office, health center, health posts.**
- 2 Review line list of measles case form in woreda health office, health center, health posts.**
- 3 Review under five and adult OPD register in , health center, health posts.**
- 4 Review Immunization monitoring charts in woreda health office, health center, health posts.**
- 5 Check cold chain system in woreda health office, health center, health posts**
- 6 Review RRT minute book in woreda health office, health center, health posts**
- 7 Preparation for response, is there RRT, logistic availability**

Zone department checklist

- 1 Review report form in the Zone Department
- 2 Review line list of measles case form in the Zone health department
- 3 Check cold chain system in in the Zone health department
- 4 Preparation for response, is there RRT, logistic availability
- 5 Review RRT minute book in in the Zone health department

Meeting started on measles out break.....

How many woreda affected by this out break

.....

When and where was the first case occurred.....and.....

The first case reported date.....

When did you report to Regional health beuro

Check list for woreda health office

Number of kebele	Total population	Total house hold	Total under five	NO of GOT	

Immunization coverage in 2006, 2007 (copy) the first quarter 2008

.....

Health seeking attitude of the community during measles out break

.....

.....

When they start the meeting

When did you heard and report the first measles case

From where did you get first report.....

When did you report to the zone

Woreda PHEM coordinator

When and where was the first case occurred.....and.....

The first case reported date.....

Was there any changes with the surveillance system

.....

.....

Was there any population displacement.....

.....

.....

Total suspect case.....

Total confirmed case.....

Total deaths.....

Which woredas kebele affected.....

Affected kebele number.....and total population of those kebeles.....

RRT minute book.....

Compare the last year measles cases with the current.....

.....

Cold chain.....

Available logistics.....

Health center checklist

- Health center... head
- Total population.....
- Catchment area and total kebele.....
-
- Immunization coverage(copy) 2006,2007,the first quarter 2008
.....
- Growth monitoring
- RRT minute book.....
- Meeting started on measles out break.....
- How many kebeles affected.....
- When and where was the first case occurred.....and.....
- The first case reported date.....
- When did you report to woreda office.....
-
- Health center focal person.....
- When and where was the first case occurred.....and.....
- The first case reported date.....
- How many kebeles affected in your catchments.....

Health post

Kebele Name -----Health post name

No of HEW at health post -----1-----2-----

Total population of the kebele.....

Total got.....

When and where was the first case occurred.....and.....

The first case reported date.....

When did you report to health center.....

Immunization coverage.....

Cold chain system in the health post

.....
.....
.....

Immunization schedule

.....

From where did you get your vaccine?.....

Is there outreach programs.....

Health post to outreach site.....km (time taken.....)

RRT minute book.....

Was First meeting after measles out break

Is there line list available.....

.....









