Addis Ababa University, College of Health Sciences,

School of Public Health

Ethiopia Field Epidemiology and Laboratory Training Program (EFELTP)

Compiled Body of Works in Field Epidemiology

By

Kalkidan Shimels (DVM)

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. **Dr. Adamu Adisie**
2. **Dr. Fufa Abunna**

June, 2019

Addis Ababa, Ethiopia.

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List of abbreviations

AFI: Acute Febrile Illness

AIDS: Acquired Immune Deficiency Syndrome

ANC: Antenatal Care

AR: Attack Rate

AWD: Acute Watery Diarrhea

BPR: Business Process Reengineering

CDC: Center for disease control

CFR: Case Fatality Rate

CHD: Community Health Day

CI: Confidence Interval

CTC: Cholera Treatment Center

DRMFSS: Disaster Risk Management and Food Security Sector

EC: Ethiopian Calendar

EFY: Ethiopian Fiscal Year

EPHI: Ethiopian public health institute

EPI: Extended Program of Immunization

ETB: Ethiopian Birr

FAO: Food and Agricultural Organization

FMoH: Federal Ministry of Health

HC: Health center

HEW: Health Extension Worker

HP: Health Post

HH: House Hold

IDP: Internally Displaced Persons

IRS: Indoor Residual Spray

ITN: Insecticide Treated Bed Nets

LLIN: Long Lasting Insecticide Nets

LP: Lumbar Puncture

MDG: Millennium Development Goal

OPD: Outpatient Department

OR: Odds Ratio

OTP: Outpatient Therapeutic feeding Program

PHEM: Public Health Emergency Management

PTB: Pulmonary Tuberculosis

PF: Plasmodium Falsifarem

PV: Plasmodium Vivax

RDT: Rapid Diagnostic Test

RHB: Regional Health Bureau

RRT: Rapid Response Team

RUTF: Ready to Use Therapeutic Food

SAM: Sevier Acute Malnutrition

SC: Stabilization Center

SNNPR: South Nations Nationalities and Peoples Region

TB: Tuberculosis

TSFP: Target Supplementary Feeding Program

UNICEF: United Nations International Children's Emergency Fund

USA: United States of America

UTI: Urinary Tract Infection

WHO: World Health Organization

EXECUTIVE SUMMARY

This document contains a two year output of Field Epidemiology Training Program that has to be submitted to Addis Ababa University, graduate school of public health for the final accomplishment of master degree in Field Epidemiology. The majority of the program (75%) contains field works that known as residency. This document includes the two year outputs including diseases outbreak investigations, public health surveillance data analysis, surveillance system evaluation, health profile description report, narrative summary of disaster situation report, scientific manuscript and abstracts. During my residency I have tried to work my best in both office works as well as field works. The two years activities are summarized and presented by one document in eight chapters.

The first chapter consists of two outbreak investigations which aresuspected scabies outbreak investigation which is conducted in Humbo district of Welayta zone SNNPR from 10November to 20November, 2018 and malaria outbreak investigation conducted in Areka town administration in Welayta zone, SNNPR from May 11 to 20, 2019. The second chapter is five years (2013-2017) human and animal anthrax data analysis report in SNNPRS. Surveillance system Evaluation which is found in the 3rd chapter was conducted in Hawella Tulla sub city of Hawassa city administration from March 05 – March 11/2019.

The fourth Chapter contains Health profile description report which is conducted in Wensho District of Sidama zone SNNPR from February 5 up to February 15, 2018. One manuscript was prepared for peer reviewed journals and two abstracts were prepared. Meher Season Emergency Health and Nutrition needs assessment was conducted in GURAGIE and SILTE zones SNNPR, Ethiopia, in December 2018 together with other relevant sectors and partners.

The final output was protocol/proposal for epidemiologic research project with a title of assessment of knowledge, attitude and practices towards scabies prevention and control strategies- Humbo district, Welayta zone SNNPR region, EthiopiaApril, 2019. In addition, I was participated in weekly Emergency health and nutrition response activities and in all PHEM activities of the region as the program expectation.

CHAPTER I – OUTBREAK/EPIDEMIC INVESTIGATIONS

1.1. Investigation of suspected scabies outbreak in Humbo district, SNNPR, Ethiopia, 2011 EFY.

ABSTRACT

Background: - Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. hominis. Scabies is an important disease of children, but it occurs in both sexes, at all ages, in all ethnic groups and at all socioeconomic levels and personal hygiene is an important preventive measure and access to adequate water supply is important in control. A suspected scabies outbreak occurred in Humbo district of Welayta zone SNNPR Ethiopia. Following this a group of expertise was deployed from regional health bureau to the area to investigate the outbreak and to provide appropriate control and prevention measures.

Methods: -A descriptive cross-sectional study was undertaken from the collected line list of cases in Humbo district of Welayta zone from November 10 to November 20, 2011 EFY.

Results: - A total of 1733 suspected scabies cases from September to November 2011were reported from 22 kebeles of Humbo district. Out of 1733 cases, 1043 (60.1%) were males and 691 (39.9%) were females. Children's of 5-14 years of age groups were the most affected age group (n= 731) with an attack rate of 26.5/1000 population followed by adults of age >15 year with an attack rate of (n=966) 22/1000 population. The overall attack rate of 22 affected kebeles was 20.2 cases/1,000 populations, with no scabies related death (CFR=0). Out of affected 22 kebeles Koysha wangala kebele is highly affected N=189 (11%) with the Attack rate of 61.9/1000 population.

Conclusion: A total of 1733 cases and zero death were reported throughout the outbreak period. High proportion of cases was found in five to Fourteen years' age category. Mass treatment was given by perimetrin despite of shortage. Strong ongoing active case surveillance of scabies, health education on treatment and prevention of scabies and adequate scabies treatment should be provided.

Key words: Scabies, outbreak, attack rate, Humbo, SNNPR Ethiopia**.**

1. INTRODUCTION

Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. hominis. Human scabies is a microscopic mite that burrows into the upper layer of skin where it lives andlays its eggs [1]. Sarcoptes scabiei undergoes four stages in its life cycle: egg, larva, nymph and adult. Females deposit 2-3 eggs per day as they burrow under the skin. Infestation begins when one or several pregnant female mites are transferred from the skin of an infected person to the skin of an uninfected person [1].

Scabies is transmitted primarily through prolonged, direct skin-to skin contact with an infected person and may also be transmitted through shared clothing, towels, bedding, linens, carpets, and furniture [2]. An infected person can spread scabies even if he/she does not have symptoms. On a person, scabies mites can live for as long as one to two months and 2 to 5 days on surfaces (off a person). A person is no longer considered contagious 24 hours after start of effective treatment. On a person, scabies mites can live for as long as 1-2 months. Off a person, scabies mites usually do not survive more than 48-72 hours. Scabies mites will die if exposed to a temperature of 50°C (122°F) for 10 minutes [3].

The most common signs and symptoms of a typical scabies infestation are intense itching (pruritus) especially at night and a pimple-like (papular) itchy rash. The rash may contain tiny blisters (vesicles) and scales. Tiny, raised, crooked grayish-white or skin-colored burrows are sometimes seen on the skin; the burrows can be a centimeter or more in length. The itching and rash may affect any part of the body, or may be limited to common sites like the webbing between the fingers, wrist, elbow, armpit, shoulder blades, breasts, waist, genitals, buttocks, and knees. Skin sores and secondary bacterial skin infections can occur due to scratching of affected areas [4].

Scabies is an important disease of children, but it occurs in both sexes, at all ages, in all ethnic groups and at all socioeconomic levels and personal hygiene is an important preventive measure and access to adequate water supply is important in control [5, 6]. Scabies is a skin disease known to humans for at least 2,500 years [7].

It is reported that overcrowded living conditions, sleeping together, sharing of clothes, sharing of towels, poor hygiene practices, malnutrition, and travel to scabies outbreak areas are common risk factors for scabies [1 and 10].

In Ethiopia, scabies is common especially during natural or manmade disasters such as flooding, drought, civil war and conflict, poor water supply and sanitation, and overcrowding living condition. According to public health emergency measures surveillance report scabies is becoming beyond sporadic clinical cases but is turn to be a public health concern and affecting wider geographic areas and population groups especially in drought affected nutrition hotspot districts [2].

A suspected scabies outbreak occurred in Humbo district of Welayta zone SNNPR Ethiopia. Following this a group of expertise was deployed from regional health bureau to the area to investigate the outbreak and to provide appropriate control and prevention measures.

2. OBJECTIVES

General Objective

- To describe the distribution of Scabies cases and to implement early Scabies control intervention in Humbo district of Welayta zone, SNNPR, 2018.

Specific Objective

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

3. METHODS AND MATERIALS

Study area and Period

The outbreak investigation was conducted in Humbo district of Welayta zone from 10November to20November, 2011 EFY. Humbo district which is 395 km south of Addis Ababa is divided in to 2 urban, and 39 rural kebeles. Humbo district has projected total population of 167,018 for 2018/2019 (projected from the 2007 national census).

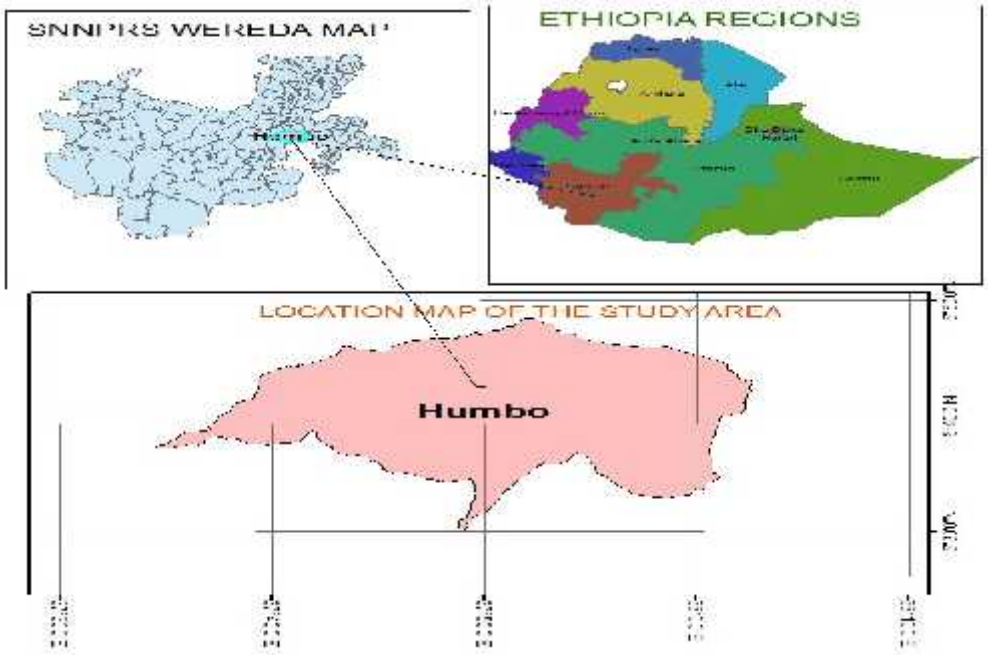

Figure 1: map of the study area Humbo district, SNNPR, Ethiopia, 2018.

Study design

A descriptive cross-sectional study was undertaken from the collected line list of cases.

Data Collection Methods and Tools

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

Case Definitions

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

- **Confirmed case**: A person who has a skin scraping in which mites, mite eggs or mite feces have been identified by a trained health care professional.
- **Contact**: A person withoutsigns and symptoms consistent with scabies who has had direct contact (particularly prolonged, direct, skin-to-skin contact) with a suspected or confirmed case in two months preceding the onset of scabies signs and symptoms in the case.
- **Epidemiologically linked case: -** Is a suspected case, which has contacts with laboratory confirmed case or another epidemiologically confirmed case.

Data processing and analysis

The data were entered and analyzed using Microsoft excel and results were presented using descriptive table and charts.

Ethical issues

SNNPR health bureau gave a formal letter to Zonal health office for the investigation of scabies outbreak and to support the investigating group.

Data Dissemination

We were prepared written report of soft copies and share to, Welayta zone health bureau PHEM department, East Humbo Woreda PHEM core process and A.A.U school of public health and EFETP mentors.

4. RESULTS

There were Scabies suspected reports from 22 Kebles of Humbo district in Welayta zone. The line lists of Scabies cases of the district showed a situation of Outbreak. By making discussion with the regional and Zonal PHEM a team was deployed and traced the affected kebeles for an investigation and control of the Outbreak.

Description of the scabies cases by person

A total of 1733 suspected scabies cases from September to November 2011were reported from 22 kebeles of Humbo district. Out of 1733 cases, 1043 (60.1%) were males and 691 (39.9%) were females. The median age was 19 years which ranges from 1 to 78 years. Children's of 5-14 years of age groups were the most affected age group (n= 731) with an attack rate of 26.5/1000 population followed by adults of age >15 year with an attack rate of (n=966) 22/1000 population and the least affected age group was under 5 years children with attack rate of 2.7 cases/1000 population. The overall attack rate of 22 affected kebeles was 20.2 cases/1,000 populations, with no scabies related death (CFR=0).

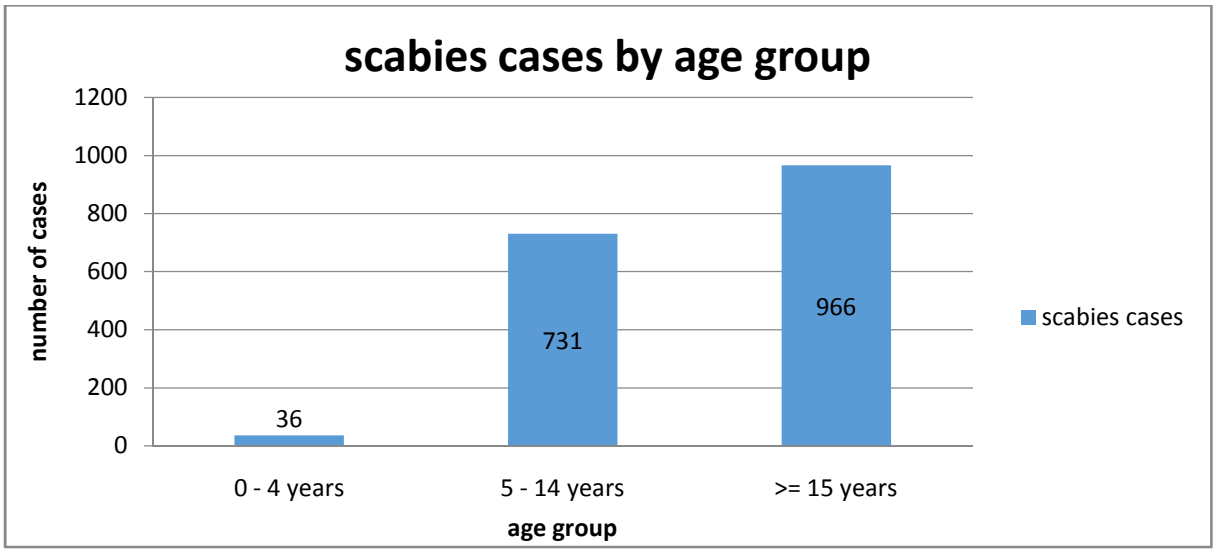

Figure 2: scabies cases by age group Humbo district, SNNPR, Ethiopia, 2018.

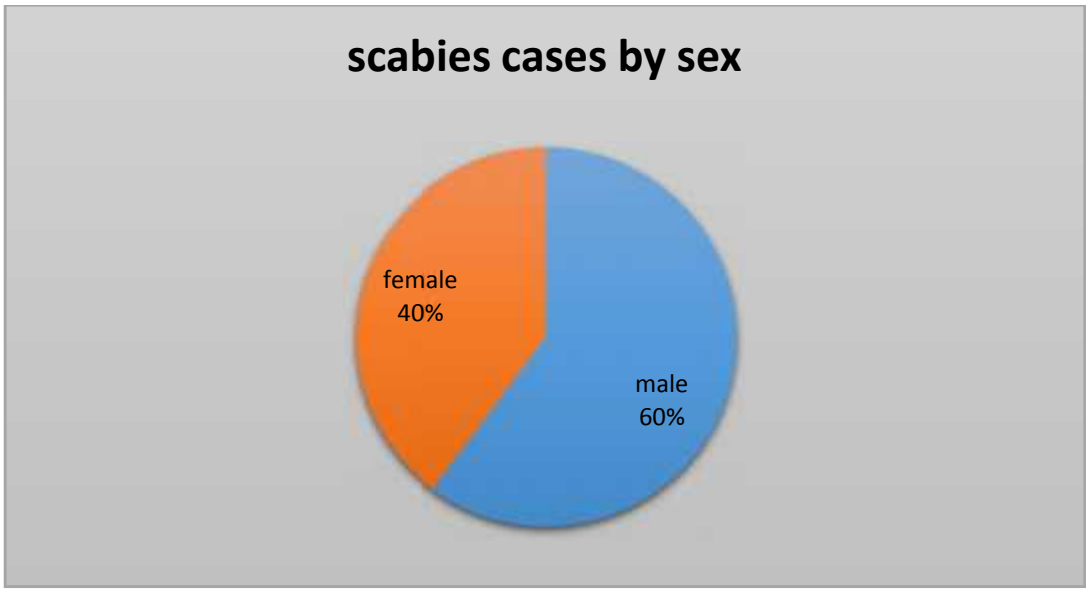

Figure 3:proportion of scabies cases by sex Humbo district, SNNPR, Ethiopia, 2018.

Description of the outbreak by place

When we see the cases by place, out of 22 affected kebeles Koysha wangala kebele is highly affected N=189 (11%) with the Attack rate of 61.9 cases per one thousand population followed by Galcha kara kebele N=197(11.3%) with the attack rate of52 casesper one thousand populations and Hobicha bongota kebele N= 495(28.5%) with the attack rate of 51.2/1000 population.

Table 1:Attack rate of Scabies cases per 1000 population among Kebles of Humbo district, SNNPR, Ethiopia, 2018.

S.no	Name of kebeles	Total population	No of scabies cases	Attack rate / 1000 population	Remark
1	Hobich Bongota	9667	495	51.2	
2	Galcha kara	3788	197	52	
3	Koysh Wangala	3050	189	61.9	highest
4	Abela Kolshbo	3542	101	28.5	
5	shochora gola	4229	91	21.5	
6	Hobich Borekosh	3812	78	20.5	

7	Abela longona	4198	76	18.1	
8	AbelaAjeja	1954	69	35.3	
9	koysha gola	3042	64	21	
10	Abela Marka	3676	59	16	
11	Aneka Wocha	3007	48	15.9	
12	Kodo Kanko	2712	46	16.9	
13	Abay Bilat	3327	43	12.9	
14	Fango lome	5110	38	7.4	
15	Shchora Abela	3135	35	11.2	
16	Sere tawrata	4684	27	5.8	
17	Fango Gechecha	4242	22	5.2	
18	Abay Chokare	4439	21	4.7	
19	Shochora osse	3198	15	4.6	
20	Demba koysha	2716	15	5.5	
21	Abay Gurecho	3328	3	0.9	
22	Abela Faracho	4921	1	0.2	
23	Grand Total	85777	1733	20.2	

Description of Scabies cases by time

The outbreak started in mid-September and lasted up to November. The outbreak was reported to the district in October 30, 2011 and the investigation was started in November 10, 2011. The burdens of cases have been increased then after and reached its peak on November 15, 2011 EFY.

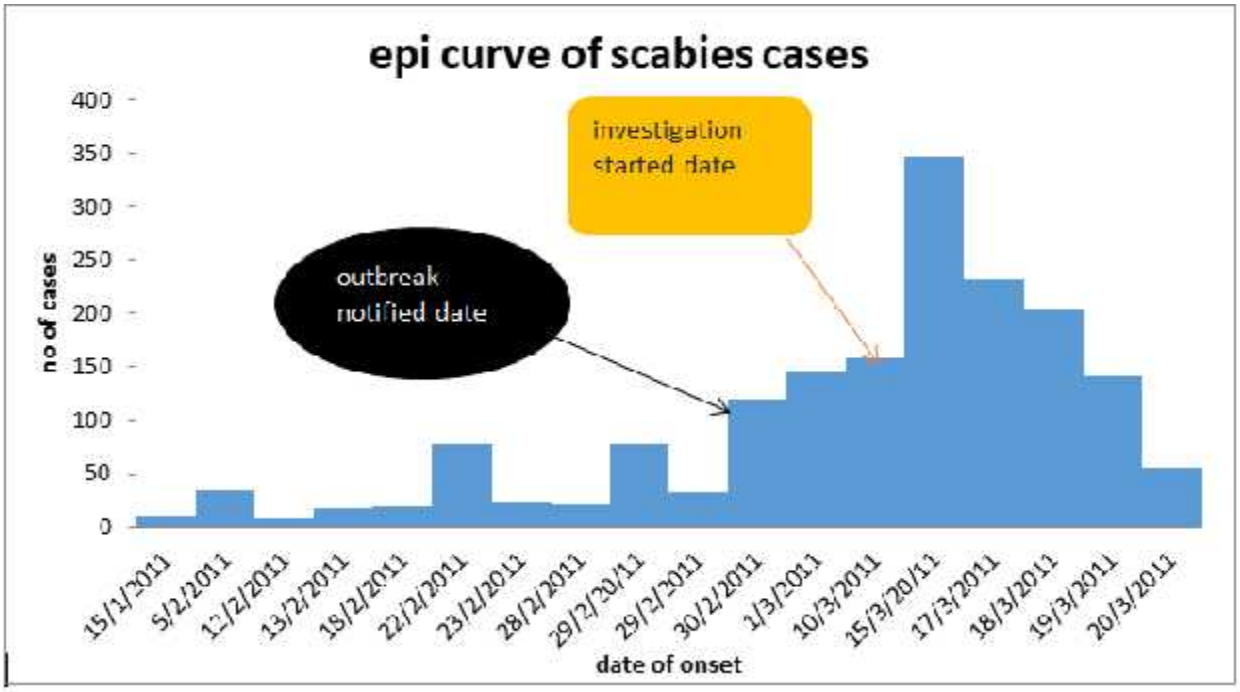

Figure 4: Epidemic curve of scabies outbreak by date of onset, Humbo District, SNNPR, Ethiopia, 2018.

5. DISCUSSION

In a line list received from Humbo district health office we have found that 22 kebeles were affected from the total 41 kebeles of the district. A total of 1733 scabies case were reported and the overall attack rate of 22 affected kebeles was 20.2 cases/1,000 populations, with no scabies related death (CFR=0) and from the total cases 1043(60.1%) were males. The median age was 19 years which ranges from 1 to 78 years.

From the total 1733 scabies cases children of 5-14 years of age groups were the most affected age group (n= 731) with an attack rate of 26.5 cases/1000 population followed by adults of age >15 year with an attack rate of (n=966) 22/1000 population. This finding is similar to studies conducted in East Badowacho district of SNNPR, Ethiopia, in Fiji and Cameroon where, Children in primary school were most affected populations [8, 11 and 12]. This might be due to the fact that younger children, particularly, those at school are at high risk of scabies infestations by playing together with scabies patients and suffocated class rooms i.e, high number of students in single class may increase the susceptibility of cross-infestation by increasing contacts which can be passed to family members and other.

When we see the cases by place, out of 22 affected kebeles Hobicha bongota kebele N= 495(28.5%) has high number of cases than others however, when we see the cases by attack rates per 1000 population Koysha wangala kebele is highly affected N=189 (11%) with the Attack rate of 61.9 cases per one thousand population followed by Galcha kara keble N=197(11.3%) with the attack rate of 52 cases per one thousand populations and Hobicha bongota kebele with N= 495(28.5%) comes at 3rd place with the attack rate of 51.2/1000 population. Here all the affected kebeles are rural kebeles and no cases are reported from 2 urban kebeles which are found in the district. Similarly one study in Fujii said Scabies was most prevalent in people living in rural areas (25.6%) [8]. Other study suggested that in remote Aboriginal communities in Australia's Northern Territory, scabies is endemic, with up to 50% of Children and 25% of adults infested at some times [13]. This may be due to low water coverage in rural areas less awareness about WASH in the community and relatively high living standard of urban communities.

The district water coverage was 41%, and in the affected kebeles we have seen that the community waits up to 6 hours to fetch water from communal pipe lines. The current drought expansion and increased number of water scarce district with limited WASH intervention further worsen the disease expansion and severity among the vulnerable [2].

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

Public health interventions taken

Mass treatment was given for the cases with perimetrin but the contacts are not treated and the district faced a shortage of perimetrine to treat all the cases and the contacts so we have communicated with the regional health bureau to get additional perimetrin ointment and gave it to the district. Health education was given for the community and students in school to prevent the transmission of the disease, to maximize the health seeking behavior and treat if there is sign and symptoms of scabies.

6. CONCLUSION

A total of 1733 suspected scabies cases from September to November 2011were reported from 22 kebeles of Humbo district in SNNPR with over all attack rate of 20.2/1000 population all the cases live in arid rural area which has a critical water shortage. Out of 1733 cases, 1043 (60.1%) were. Children of 5-14 years of age groups were the most affected age group (n= 731) with an attack rate of 26.5 cases/1000 population this may be due to school age children acquire the disease by playing together with scabies patients and due to suffocated class rooms. Out of affected 22 kebeles Koysha wangala kebele is highly affected N=189 (11%) with the Attack rate of 61.9 cases per one thousand population. The district water coverage was 41%, and in the affected kebeles we have seen that the community waits up to 6 hours to fetch water from communal pipe lines and literatures show that, water shortage is associated with high risk of scabies. Mass treatment was given for the cases with perimetrin despite of shortage and health education was conducted.

7.RECOMMENDATIONS

- Health Extension worker should enhance the awareness of community and primary school students towards scabies infection and personal hygiene.
- The District health office has to strengthen the surveillance system in most affected kebeles and should report the cases on time.
- The zone administration should give especial attention in the scabies prevention and should give trainings on early detection of potential scabies cases for health extension workers and health staff.
- The regional health bureau should provide adequate scabies treatment drugs for affected areas.
- Water coverage of the district as well as schools should be given special attention.

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1.2 Malaria Outbreak Investigation and Intervention in Areka town administration SNNPR, Ethiopia, 2019

Abstract

Background: Malaria is mosquito-borne parasitic disease and one of the most serious health problems of human beings. Despite intensive control measure like vector control and environmental management through community participation malaria remained a public health concern of the country. Unusual malaria cases increment was reported from Areka town administration, SNNPR in 15th epidemiologic week of 2019. We investigated the outbreak to describe the magnitude of the disease and identify risk factors associated with the outbreak.

Methodology: We investigated malaria outbreak in Areka town administration from May 11 to 20, 2019 using descriptive cross-sectional study followed by unmatched case-control study design. We recruited 50 cases and 100 controls. Data entry and cleaning conducted using Epi Info and Microsoft excel for analysis.

Results: We identified a total of 534 malaria confirmed cases from epidemiologic week 15 – 18, 2019. But the cases are still increasing after the investigation that makes the outbreak on going. Out of 534 malaria cases seen in four weeks majority of the cases 516(96.6%) were plasmodium falciparum (P.F) species, 14(2.6%) were plasmodium Vivax (P.V) and 4(0.7%) were mixed infections, with 23.9% positivity rate, 5(0.93%) admission rate and no reported death. the overall attack rate was 8.6 malaria cases per 1000 population. Out of the total 534 malaria confirmed cases 286 (55.6%) were females and Majority of the cases were among 15-59 years of productive age group, 59.9 %(n=320). Stay outside home during night OR 3.9 (1.7- 9.3) and Presence of stagnant water OR 9.6 (4.02- 25.3) was independent risk factors for the development of the disease and sleeping under net always OR 0.39 (0.19 – 0.8) and availability of liquid and solid west disposal OR 0.22 (0.21 – 0.67) were independent protective factors.

Conclusion and Recommendation: presence of stagnant water and absence of IRS were attributed for the outbreak. We recommended proper ITNs utilization, indoor chemical spray per standard and strong environmental management through optimized community participation.

Key words: malaria, outbreak, Areka, SNNPR, risk factors.

1. INTRODUCTION

Malaria is the most important parasitic and vector born disease caused by parasites of the Plasmodium family which has four species Plasmodium vivax, Plasmodium falciparum, Plasmodium malariae and Plasmodium ovale in Africa, and another fifth species P. knowlesi seems to be restricted to Southeast Asia and transmitted by infected female Anopheles mosquitoes [1].

Irregular fever, vomiting, diarrhea, muscle pains, abdominal pain, anorexia, sweating, Headache, chilling and shivering, rigor, and febrile convulsions in young children are among the common features of malaria during the acute attack [2]. Severe and complicated malaria is mostly caused by *P. falciparum* infection. Unless diagnosed and treated promptly, the clinical feature develops to sever complications like; Altered consciousness, prostration (unable to walk or sit up), unable to eat or drink, repeated vomiting, severe dehydration, convulsion or recent history of convulsion, difficult breathing, anemia (pallor), bleeding, no urine out in the last 24 hours, jaundice and hemoglobinuria [3].

Malaria is almost always transmitted by the bite of an infective female *Anopheles* mosquito. Transmission may occur through transfusions or the use of contaminated needles but these modes of transmission are rare. The incubation Period varies depending on the species, 12 days for *P. falciparum*, 30 days for *P. malaria* and 14 days for *P. ovale* and *P. vivax*. Inadequate or inappropriate prophylaxis may lengthen [3].

Sleeping outside home, presence of malaria case in home, travel history to malaria endemic areas, sleeping without ITNS, HH with no IRS spray, presence of artificial water holding container near home, presence of mosquito vectors/breeding sites around home or vicinity, unprotected irrigation and presence of intermittent rivers are among the risk factors for the disease.

According to WHO world malaria report, about 3.2 billion people were at risk of the disease in 97 countries, territories and areas in 2013, and an estimated 198 million cases occurred (ranging from 124 million–283 million) and the disease killed about 584 000 people (ranging from 367 000–755 000) during the same year[4].The burden is heaviest in African Region, where an estimated 82% and 90% of all malaria cases and deaths occur mostly affecting children aged

under 5 years in sub-Saharan Africa [4]. Malaria case incidence and mortality rate decreased by 30% and 47% globally, since 2000 respectively [4]. In most countries where malaria is endemic, the disease disproportionately affects poor and disadvantaged people, who have limited access to health facilities and can barely afford the recommended treatment [1].During 2000–2013, the scale-up of effective malaria prevention and control interventions saved an estimated 4.2 million lives, with 92% of those being children aged <5 years, and decreased malaria mortality by 34% in sub-Saharan Africa [4].

In Ethiopia approximately 68% of the total population is living in a malaria risk area mainly at altitudes below 2,000 meters [3] and 75% of the geographic regions of the country have significant malaria transmission risk. Among the leading communicable disease in Ethiopia, malaria accounts for about 30% of the overall Disability Adjusted Life Years lost [5, 6].

Malaria was the leading cause of outpatient visits and health facility admissions in Ethiopia in 2009/2010, accounting for 14% of outpatient visits and 9% of admissions [7]. According to 2011 MIS report, the parasite prevalence of malaria was 1.3 and slide positivity rages from 25-35%. The most dominant malaria parasites were; P. falciparum 77 % and P. vivax 23% [8].

Since 2005, Ethiopia has scaled up malaria control programs using key malaria interventions such as effective case management and vector control options like indoor residual spray and use of long-lasting insecticidal nets in endemic areas [9]. In Ethiopia, according to WHO recent report during 2006-2011, malaria cases in all ages declined by 66% and slide positivity rate by 37%. According to 2015 world malaria day FMOH report, the number of reported malaria cases, admissions and malaria related deaths has been significantly reduced by 67%, 48% and 55% respectively [5]. Ethiopia planned to reduce malaria mortality rate and parasite prevalence from 4 in 2012 to 0.6 in 2020 per 100,000 population at risk and 1.3 in 2011to <1 in 2020 respectively [6].

According to SNNPR PHEM weekly report in 2018 a total of 1,544,553 malaria suspected cases and 183114 clinically confirmed cases were registered in SNNPR. From clinically confirmed cases 119483 (65.2%) was *P. falciparum* and 63616(34.7%) was *P. vivax* and there is 15 (0.008%) death registered. The prevalence rate of confirmed cases in this year was 907 cases per 100,000 populations with 0.6% admission rate. The burden of malaria in the study town in the same year was 17,423 suspected and 738 confirmed cases from clinically confirmed cases 698

(94.6%) was *P. falciparum* and 40(5.4%) was *P. vivax* with 0% death and the prevalence was 1.2%. There were normal trends of malaria cases in Areka town during the last six years but starting from 15th W.H.O epidemiologic week of 2019 unusual increment of malaria cases was reported from the town administration which is found in Welayta zone. After having this, team of expertise was deployed from the regional health bureau to this town and investigated the outbreak.

2. OBJECTIVES

General objective

To investigate the malaria outbreak and predisposing factors for the outbreak in Areka Town of Welayta zone, SNNPR, Ethiopia from May 11 to 20, 2019.

Specific Objectives

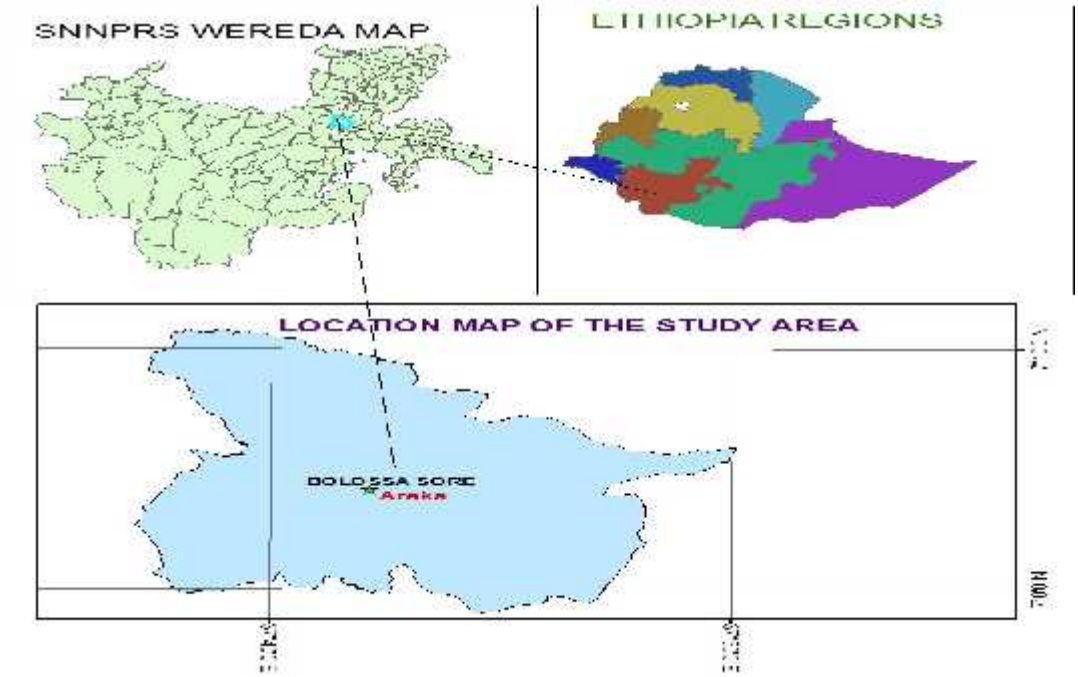
- To describe malaria outbreak by person, place and time variables
- To identify the gaps in prevention and control of malaria in the town
- To identify the risk factors for malaria outbreak
- To assess possible prevention and control methods of malaria in the town

3. METHODS AND MATERIALS

Study area and period

The investigation was conducted in Areka town administration of which is found in Welayta zone of SNNPR. Areka town is 299 km away from Addis Ababa in southern direction and 24 km away from the zonal capital Sodo town. The town is divided into 4 administrative kebeles and has a total of 62,254 populations. There is 1 health center and 1 non-governmental hospital in the city administration. The study was conducted from May 11 to 20, 2019.

Figure 5: map of the study area, Areka town administration, SNNPR, Ethiopia, 2019.



Study design

We applied descriptive cross-sectional study followed by unmatched case control study design by recruiting 50 cases and 100 controls (1:2 ratios of cases to controls) to identify the source and risk factors associated with this outbreak.

Sampling method and sample size: Cases were selected randomly from the list of the health center registration book and controls were also selected randomly from the community. Unmatched case control study using convenience sampling technique with 1:2 ratios, where 50 cases and 100 controls were used.

A case: is defined as an individual currently living in the study area and having experience of malaria infection confirmed by microscopy in Areka health center during the outbreak time.

A control: is defined as an individual living in the study area that had not had self-reported and laboratory confirmed malaria illness within the same period.

Inclusion criteria: All residents of the Areka town and volunteers for the interview

Exclusion criteria: Those who refused to participate were excluded as well as new comers or a person who may not stay in the town in the previous three weeks was excluded from the study.

Data collection and data source

Basic malaria surveillance data were collected from the weekly report of SNNPR health bureau Public Health Emergency Management core process in order to compare the trend of malaria in the last 5 years in the town and to decide the existence of outbreak. In addition malaria registration book of the health center was used for requiting cases and for descriptive study.

A structured questionnaire comprising demographic data (age, ethnic group, marital status, educational level and occupation), clinical bases (history of treatment, sign and symptoms and treatment outcomes), risk factors of the disease and knowledge assessment about the disease and mode of transmission and prevention method was developed.

Environmental Assessment

Data was collected on the presence of mosquito breeding sites from the town health office and health facilities. Similarly, observation of these potential mosquito breeding sites was conducted.

Data analysis

The questionnaire was projected into Epi info then coded, entered and cleaned using Epi info and analyzed using both Epi info and micro-soft excel. Descriptive data were analyzed for frequencies and proportion. Significance of the association was judged using 95% CI for OR by two by two and logistic regression model.

Ethical consideration

Official letter waswritten from regional health bureau PHEM to havePermission for the investigation and given to the zone and town administration health bureaus.

Dissemination of the Study

Briefing and debriefing was conducted to the zone, town administration and regional health bureau and the final report will be submitted to the university and will be presented to the town administration and regional PHEM.

4. RESULTS

Descriptive epidemiology of the line list

The number of malaria cases was inclined starting from WHO Epidemic Week 15 when we see the trend with the same period of the previous year.

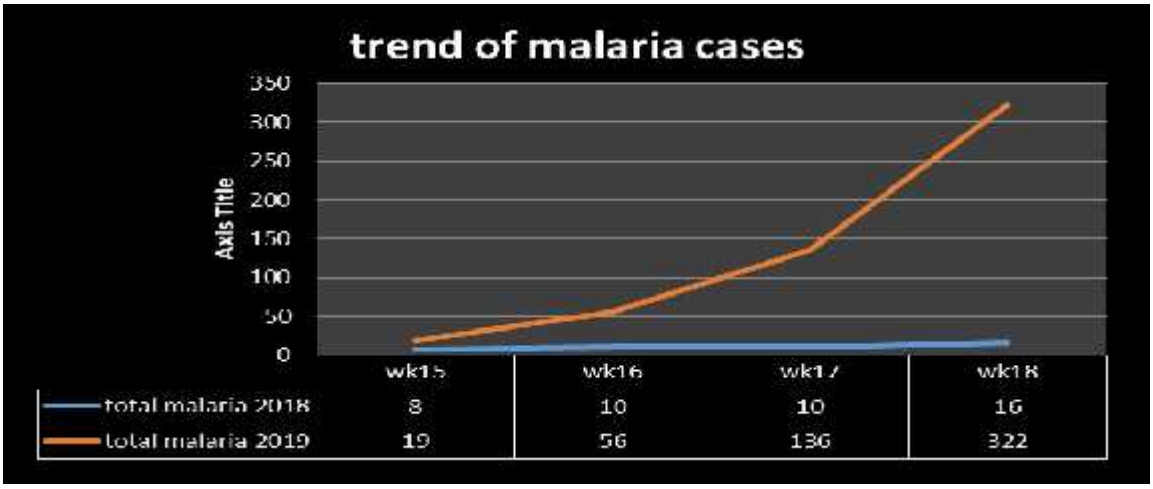


Figure 6: trend of malaria cases Areka town administration, SNNPR, Ethiopia, 2019.

The number of malaria reported cases was started doubling in epidemiologic week 15 and increased in 20 folds in WHO epidemic week 18, 2019as compared to the prior year. Response and investigation for the outbreak was started in the WHO epidemic week 18. We also tried to see the five (2015 – 2019) year weekly report of confirmed malariain the town. As we can see from the table below, case of malaria was increasing continually starting from week 15, 2019.

epi weeks	years				
	2015	**2016**	**2017**	**2018**	**2019**
wk15	10	14	11	8	19
wk16	15	9	18	10	57
wk17	11	15	13	10	136
wk18	17	33	18	16	322

Table 2: Confirmed malaria cases by epidemiologic week (from 15 to 18epi week)Areka town, Welayta zone,SNNPR, Ethiopia, from 2015 to 2019.

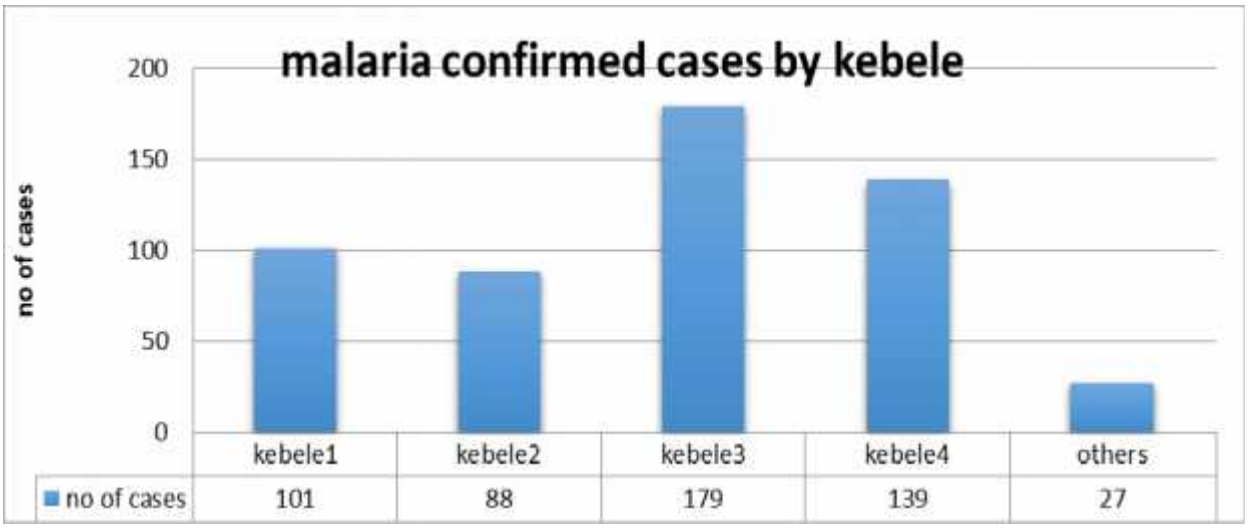
We identified a total of 534 malaria confirmed cases from epidemiologic week 15 – 18, 2019. Out of 534 malaria cases seen in four weeks majority of the cases 516(96.6%) were plasmodium falciparum (P.F) species, 14(2.6%) were plasmodium Vivax (P.V) and 4(0.7%) were mixed infections, with 23.9% positivity rate, 5(0.93%) admission rate and no reported death. In order to see the overall attack rate of the district during this 4 week interval was 8.6/1000. Out of the total 534 malaria confirmed cases 286 (55.6%) were females and 248 (46.4%) were male patients. The average age was 20.7 years age ranging from 1- 84 year. Majority of the cases were among 15-59 years of productive age group, 59.9 %(n=320) followed by 5-14 age group with 44 %(n=156) and under 5 children 9.2% (n= 49) and finally >60 age groups 1.7 %(n= 9).

Age group	No of cases	ASAR/1000 pop.
0 - 4	49	5.04/1000
5 - 14	156	7.8/1000
15 - 59	320	10.8/1000
>60	9	3.1/1000
total	534	8.6/1000

Table3: Age specific attack rate of malaria outbreak, Areka town administration, SNNPR, Ethiopia, 2019.

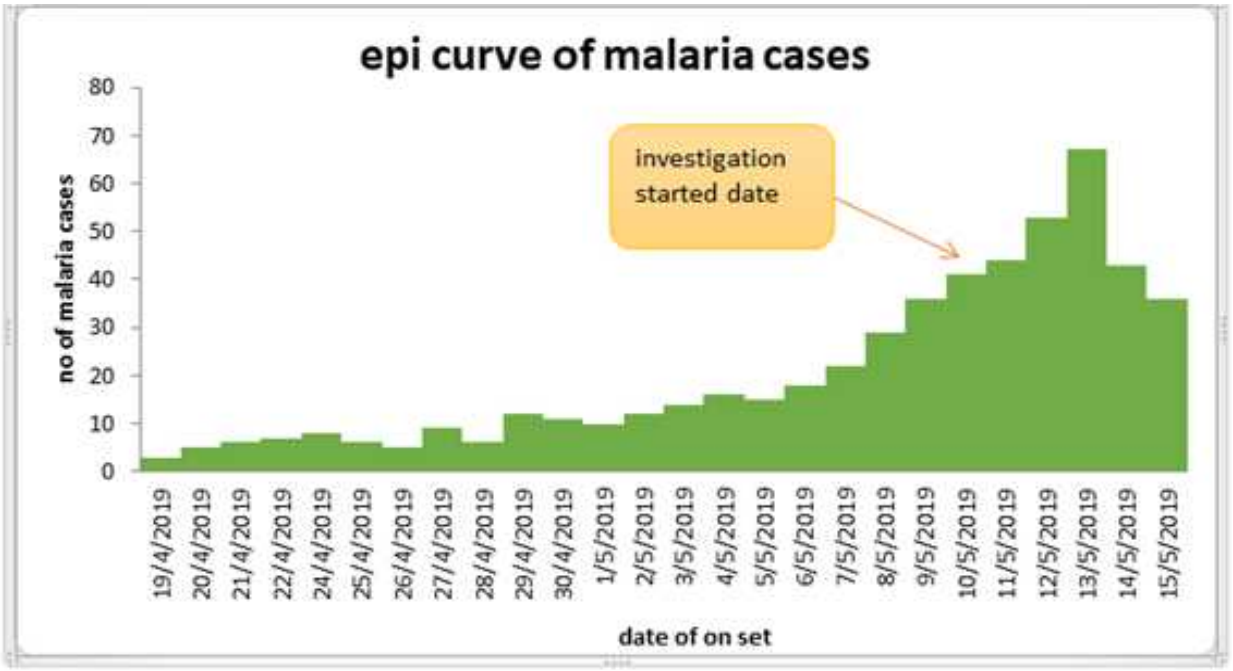
When we see the cases by place all the 4 kebeles of the town administration has been affected by the outbreak but keebele 3 is leading by accounting 33.5% (n= 179) proportion of the cases.

Figure 7: proportion of malaria cases by kebele Areka town administration, SNNPR, Ethiopia, 2019.



When we see the cases by time the outbreak began in epidemiologic week 15 (April 19, 2019) and investigation was started in epidemiologic week 18 (May 11, 2019). The number of malaria cases is decreasing but the outbreak was still ongoing as we can see from the epi curve below.

Figure 8: Epi. curve of malaria outbreak Areka town administration, SNNPR, Ethiopia, 2019.



Descriptive epidemiology of the case control study

When we see the description of the case control study, from the total of the interviewed case-control participants, 88 (58.6%) were males, and 96 (64%) were in 15-59 years age group and 74 (49.3%) were students.

No	Variables		Case (%)	Control (%)
1	Age group	< 5 years	5(10%)	10(10%)
		5 – 14 years	14(28%)	22(22%)
		15 – 59 years	30(60%)	66(66%)
		> 60 years	1(2%)	2(2%)
2	Sex	Male	29(58%)	59(59%)
		Female	21(42%)	41(41%)
3	Marital status	Married	18(36%)	35(35%)
		Single	15(30%)	37(37%)
		Not applicable	17(34%)	28(28%)
4	Occupation	Employed	4(8%)	14(14%)
		Farmer	5(10%)	11(11%)
		Unemployed	10(20%)	18(18%)
		Student	29(58%)	45(45%)
		Others	2(4%)	12(12%)
5	Educational status	Illiterate	8(16%)	6(6%)
		Read and write	6(12%)	9(9%)
		Primary	20(40%)	45(45%)
		Secondary	9(18%)	32(32%)
		Tertiary	7(14%)	8(8%)

Table 4: demographic characteristics of the case control study of malaria outbreak, Areka town administration, SNNPR, Ethiopia, 2019.

Of the total interviewed cases 78 %(39) were treated by Coartem, and 22 %(11) were treated by chloroquine. The table below shows the clinical symptoms of the cases.

Clinical symptoms	frequency	percentage
Fever	48	29.63%
Anorexia	40	24.69%
Vomiting	29	17.9%
Shivering	20	12.35%
Sweating	15	9.26%
Diarrhea	6	3.7%
jaundice	4	2.47%

Table 5: clinical manifestations of the malaria cases Areka town administration, SNNPR, Ethiopia, 2019.

Analytic epidemiology of the case control study

The bi-variate analysis result showed that, Availability of liquid and solid west disposal and sleeping under bed net always was protective risk factors against the disease. Stay outside overnight and presence of stagnant water around the house or community were significant risk factors for contracting the disease. But Presence of sick person in the house, Presence of old tires with water and Presence of un covered water collecting container were found not significant factors.

No	Variables	Category	Case(n=50)	Controls(n=100)	OR(95%CI)
1	Staying out side during night	Yes	13(26%)	9(9%)	3.5 (1.4 – 9.02)
		No	37(74%)	91(91%)	
2	Presence of sick person in the house	Yes	4(8%)	13(13%)	0.58 (0.18 – 1.9)
		No	46(92%)	87(87%)	
3	Presence of stagnant water	Yes	24(48%)	9(9%)	9.1 (3.8 – 23.1)
		No	26(52%)	91(91%)	

4	Availability of liquid and solid west disposal	Yes	2(4%)	27(27%)	0.21 (0.02 – 0.5)
		No	48(96%)	73(73%)	
5	Presence of bed nets	Yes	12(24%)	46(46%)	0.37 (0.17 – 0.78)
		No	38(76%)	54(54%)	
6	Presence of old tires with water	Yes	22(44%)	30(30%)	1.8 (0.9 – 3.7)
		No	28(56%)	70(70%)	
7	Presence of un covered water collecting container	Yes	8(16%)	10(10%)	1.7 (0.63 – 4.65)
		No	42(84%)	90(90%)	

Table6: bi-Variate analysis result of risk factors of the malaria outbreak, Areka town administration, SNNPR, Ethiopia, 2019.

Uses of repellent and protective clothes were uncommon, neither cases nor controls used them and thus not statistically significant for the disease. Last year chemical indoor residual spray was not conducted for both cases and controls and there is no intermittent river in the town area.

By multi-variate analysis, stay outside home during night and Presence of stagnant water was independent risk factors for the development of the disease and sleeping under net always and availability of liquid and solid west disposal were remained independent protective factors.

No	**Variable**	**Crude OR (95%)**	**Adjusted OR (95%)**
1	Staying out side during night	3.5 (1.4 – 9.02)	3.9 (1.7 – 9.3)
2	Presence of stagnant water	9.1 (3.8 – 23.1)	9.6 (4.02 – 25.3)
3	Availability of liquid and solid west disposal	0.21 (0.02 – 0.5)	0.22(0.21 - 0.67)
4	Presence of bed nets	0.37 (0.17 – 0.78)	0.39 (0.19 – 0.8)

Table 7: Multi-Variate analysis result of the independent risk factors of the malaria outbreak, Areka town administration, SNNPR, Ethiopia, 2019.

Environmental Assessment

Observation was conducted for availability of stagnant water, uncovered plastic water containers, broken glass bottles, old tires and other potential mosquito breeding sites. As per the national malaria prevention and control strategy thereshould be continuous provision of malaria prevention method (IRS) which was not conducted in Areka town and we have seen the community using ITNs for other purposes which makes the utilization poor. No IRS was done in the town due to lack of budget to pay for spraying persons and this is found to be the main cause of the outbreak as per the health office belief.

Public health interventions taken

- We assessed the affected kebeles with a team from the health office and reviewed bed net handling and utilization.
- Environmental investigation and management was conducted in all the affected kebeles
- An active case search and early treatment was also conducted in few households to interrupt the transmission.
- Together with the health office we started IRS spray in all the kebeles of the town.
- A team was established which contains different expertise that's led by the Mayer of the town and daily report on the number of cases and progress of IRS spray is reviewed on daily basis.
- Intensive health education was given on mass gatherings like, churches, schools and market areas targeting malaria prevention and control ,especially on bed net handling, utilization and environmental management
- Refreshment on job training was given for the health center laboratory expertise on microscopic identification of species of malaria by the regional laboratory experts.

Limitation of the study

- We used convenient sampling method due to time limitation and there was shortage of entomologist to confirm existence of anopheles mosquito larvae and measure their quantity in stagnant waters.

5. DISCUSSION

We identified a total of 534 malaria confirmed cases from epidemiologic week 15 – 18, 2019. But the cases are still increasing after the investigation that makes the outbreak on going. The number of malaria cases was inclined starting from WHO Epidemic Week 15 when we see the trend with the last year the same week. Out of 534 malaria cases seen in four weeks majority of the cases 516(96.6%) were plasmodium falciparum (P.F) species, 14(2.6%) were plasmodium Vivax (P.V) and 4(0.7%) were mixed infections, with 23.9% positivity rate, 5(0.93%) admission rate and no reported death. The overall attack rate of the district during this 4 week interval was 8.6 malaria cases per 1000 population. An epidemiological investigation of malaria outbreak in village santej, district Gandhi nagar, India ,with 15.1 attack rate per 1000 population and 43.5% positivity rate [10], positivity rate and attack rate was higher than our study finding. Outbreak investigation of malaria in North Lakhimpur district, Pakistan findings showed that, the outbreak affected a total of 7906 malaria cases, with 0.9 attack rate per 1000 population and 1.4% case fatality rate [11], the attack rate was lower than our study finding but there was no death in our study. Those differences could be due to difference in study period and geographical location of the study areas and high population density.

Due to unusual heavy rain in the area there were stagnant water bodies which is found to be a major risk factor for the disease in our study with OR of (9.6 (4.02 – 25.3)). Following this it was believed that there were mosquito larvae in this water as observed by eye. However, it was challenging to identify species of larvae and measure their quantity technically. Environmental factor was one of the major risk factor for the malaria outbreak that had significantly risk compared to the study done in South Ethiopia (4.93 (95% CI: 2.59–9.35) [12]. Similar analytic approach in Sri Lanka and India indicated that people living closer to vector breeding sites were at higher risk for malaria than those living farther away. Research conducted in Ghana also showed that abundance of water bodies have been associated with increased larval or mosquito abundance and thus increased risk for malaria transmission in human populations [13].

Correct utilization of mosquito nets, anti-malarial spraying, and appropriate use of personal preventative measures such as use of repellent and protective cloth will reduce incidence of malaria [14]. A previous risk factor analysis by Deressa et al in Oromia Region showed that both spraying and household ownership of a mosquito net was associated with lower risk of febrile

illness in children [14]. Findings of our study also exhibited that using of bed net every night is associated with a lower risk of malaria infection.

There were gaps in vector control measures in the town. Ethiopia has had made a remarkable progress in scaling up intervention of ITN distribution and IRS. But the national malaria prevention and control strategy is not doing well in the town. There is ITN distribution but the utilization of ITN is very poor some of the visited households use it to put agricultural products like maize. No IRS was done in the town due to lack of budget which likely contributed for the outbreak. Surveillance weakness was also one factor in the outbreak. Spraying larvae side chemicals, avoiding and identifying mosquito breeding sites was not early identified or done timely.

An active intervention response by the town administration and the team to control the outbreak such as establishing RRT and mobilizing the population in environmental sanitation campaign and budgeting to control the outbreak, spraying chemicals for risk areas of mosquito breeding sites, early treatment of cases continuous surveillance had been made to prevent further devastating and control the outbreak.

6. CONCLUSION

There was malaria outbreak in Areka town administration in Welayta zone which started atepidemiologic week 15, 2019. Age groups of 15 - 59 years were more affected by the disease. Presence of stagnant water which favors multiplication of mosquito and staying out side during night were significantly associated with contracting malaria in this town. In the town there is delayed response of environmental management and lack of indoor residual spray which likely attributed for the outbreak and ITN utilization was found to be poor. Using ITN and availability of liquid and solid west disposal system were found protective factors for not contracting the disease.As a public health intervention mobilizing the population in environmental sanitation campaign, budgeting to control the outbreak, spraying chemicals for risk areas of mosquito breeding sites, early treatment of cases continuous surveillance had been made to prevent further devastating and to control the outbreak.

7. RECOMMENDATION

- Since all kebeles of the town are malarious insecticide treated bed net utilization should be monitored and optimized.
- Improve awareness of the community towards malaria prevention and control activities by social mobilization, on bed net handling, utilization and environmental management.
- Regular indoor residual spray per required standard should be done.
- Identification and removal of potential mosquito breeding sites should be conducted by maximizing community participation.
- Trends of malaria cases should be monitored in weekly basis at all levels. This could help to detect malaria outbreak timely.
- The health facility should record and report malaria cases accurately to avoid data discrepancy

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CHAPTER II-SURVEILLANCE DATA ANALYSIS REPORT

Human and Animal Anthrax in South Nallltions Nationalities and peoples Region: A retrospective record review 2013-2017

ABSTRACT

Background: Anthrax is an acute zoonotic disease caused by gram-positive, non-motile bacteria known as *bacillus anthracis.* It is primarily a disease of Herbivorous and wild mammals which are commonly infected by Anthrax through ingestion or inhalation of spores while grazing and carnivores living in the same environment may become infected by consuming infected animals.Ethiopia as one of the countries with high burden of the disease has been experienced recurrent wave of hyper endemic/ epidemic outbreaks for many years.

Objective: To assess the magnitude and trend of anthrax in SNNPR from 2013-2017.

Methods: A cross sectional descriptive method of study was carried out. The trend and distributions of anthrax cases from 2013 to 2017 in SNNPR was analyzed by place and time and presented using graphs and tables.

Results: In the last five years (2013-2017) a total of 438 human anthrax cases and 47 deaths and from (2013 to half year of 2017) 1002 animal anthrax cases and 567deaths were documented in SNNPR. The anthrax cases annual prevalence was 0.5/100,000 population per year for human cases and 1.01/100,000 population per year for animal cases. Most of the human anthrax cases were reported from Bena Tsemay district of South Omo zone 222(50.6%) and konso district of Segen peoples zone 67(15.8%). And for animal anthrax cases Gewata district of Kefa zone reported 199(19.8%) of cases and Bena Tsemay district of South Omo zone148 (14.7%) cases.

Conclusion and Recommendation: Anthrax remains to be a major public health problem in the region. As per the analysis, increasing number of cases and fatalities for both animal and human anthrax were reported especially from the pastoralist and semi pastoralist areas like South Omo, Segen and Keffa zones of the region. High number of cases was seen in dry seasons of the years and increased number of human cases was observed in pastoralist districts. To determine the magnitude of anthrax in Ethiopia and in the region both human and animal surveillance system should be strengthened giving due attention to pastoralist areas. Prevention intervention should be in place in areas where the prevalence of the disease is high.

Key Word: Anthrax, Human, Animal, SNNPR, Ethiopia.

1. INTRODUCTION

Anthrax is an acute zoonotic disease caused by gram-positive, non-motile bacteria known as *bacillus anthracis*. The name of the bacterium is derived from “anthrakis”, the Greek word for coal, because anthrax in humans causes black, coal-like lesions on the skin at the site of inoculation [1].

It is primarily a disease of Herbivorous and wild mammals which are commonly infected by Anthrax through ingestion or inhalation of spores while grazing. Herbivores usually contract anthrax through ingestion and carnivores living in the same environment may become infected by consuming infected animals [2]. Humans almost invariably contract the natural disease directly or indirectly from animals or animal products. In most countries, human anthrax occurs frequently and sporadically, mainly as an occupational hazard among veterinarians, agricultural workers and workers who process hides, hair, wool and bone products. There are three forms of anthrax coetaneous, gastrointestinal and pulmonary (inhalational). The incubation period in humans is usually 1 to 7 days, but varies with the form of the disease [3].

Geographically, Anthrax is globally distributed disease it is still common in some Mediterranean countries, in small pockets in Canada and the USA, certain countries of central and South America and central Asia, several sub-Saharan African countries and western China. Sporadic cases and outbreaks continue to occur elsewhere [7].

Animal Anthrax outbreaks have been recorded in nearly 200 countries by The World Anthrax Data Site, a World Health Organization Collaborating Center for Remote Sensing and Geographic Information Systems for Public Health [4]. The data types recorded by The World Anthrax Data Site are: country-of-origin, anthrax status, vaccination program, species affected, year of outbreak, number of outbreaks during the year, number of cases, number vaccinated and total livestock population. The countries with hyper endemic/epidemic status are frequently in Africa, like Zimbabwe, from 1978-1980; where an epidemic infected nearly 10,000 humans andtook 151 lives although the status of Egypt is “Probably free”. Examples of regions with unknown anthrax status are the polar extremes, the Arctic and the Antarctic [5, 6].

Animal anthrax is an endemic disease in Ethiopia which occurs in May and June every year (anthrax season) in several farming localities of the country, although suspected cases of

livestock anthrax are reported from several districts, few of those are officially confirmed [11]. The common use of traditional medicine for anthrax in Ethiopia indicates that the disease is well recognized by rural communities but little is known about its prevalence, epidemiology and public health significance [10].

According to Ministry of Health surveillance data, in the Ethiopian fiscal year 2003, a total of 1,096 suspected human anthrax cases and 16 deaths (with a CFR of 1.5%) were reported from four regions (Tigray, Amhara, Oromia, and SNNPR) out of this the second highest number of cases (340) and the highest number of deaths 9 were reported in SNNPR which is 56% of the total deaths [9], and a total of 5197 and 26737 cases and 86 and 8523 deaths of human and animal anthrax respectively were documented from 2009-2013 nationally [12]. This shows that the surveillance system is developing recently and anthrax is one of weekly reportable disease in public health emergency management unit in health bureaus, but surveillance data of anthrax is not analyzed and communicated to concerned bodies regularly. So, the main propose of this analysis was to assess the five (2013-2017) years anthrax trend in southern nations nationalities and peoples region in order to get valuable inputs and recommend evidence based interventions for the future.

Rationale of the study

It has been estimated that 60% of all human diseases and around 75% of emerging infectious diseases are zoonotic diseases which are transmissible between animals (domestic and wildlife) and humans among which Anthrax is a serious zoonotic disease that can affect most mammals and several species of birds [7]. In SNNPR anthrax is endemic in most of pastoralist and central zones, so it is an important public health issue and there is an apparent need for accurate information through a strong surveillance system to warrant evidence based action. Therefore, analyzing anthrax data from 2013 to 2017 can be used to assess the five year trend of anthrax in the region and determine the distribution of cases. This helps to identify areas of hyper endemnicity, and figure out the completeness of the reporting system to engage in corrective actions.

2. OBJECTIVE

General Objective

- To assess the magnitude and trend of anthrax in SNNPR from 2013-2017.

Specific Objectives

- To describe the magnitude of anthrax
- To assess trend and seasonality of anthrax in the region.
- To identify the limitation of anthrax surveillances data.

3. MATERIALS AND METHODS

Study area and period

The study was conducted in Southern Nations Nationalities and Peoples' Region (SNNPR) of Ethiopia. The region is one of the 9 regional states in Ethiopia and located south west of Addis Ababa. The regional surveillance data were collected from 14 zones, 4 special districts and 1 city administration from a total of 3880 health posts, 780 health centers and 41 hospitals. Public health emergency has its own structure from the Regional level to the health post. Hence, it is a line of reporting from the lower level to the upper. The study was conducted in SNNPR regional health bureau from March to April 2018.

Source of Data

The data was obtained from Southern nations Nationalities and Peoples Region health bureau public health emergency management weekly surveillance data for human anthrax and for animal anthrax because of lack of data in the regional bureau of livestock and fisheries the data was abstracted from the Ministry of livestock and fisheries.

Study Design

A cross sectional descriptive method of study was carried out. The trend and distributions of anthrax cases from 2013 to 2017 was analyzed by place and time and presented using graphs and tables.

Sample Size and Sampling Method

All anthrax data reported between 2013 and 2017 in PHEM and from the Ministry of livestock and fisheries were included in this analysis.

Statistical Analysis

Descriptive statistical analysis of data was made using Microsoft Excel

Case Definitions

According to Public Health Emergency Management Guideline, a suspected case of anthrax was any person with acute onset of disease characterized by several clinical forms which include:

Localized form:

Coetaneous: skin lesion evolving over 1 to 6 days from a popular through a vesicular stage, to a depressed black Escher invariably accompanied by edema that may be mild to extensive.

Systemic forms:

Gastro- intestinal: Abdominal distress characterized by nausea, vomiting, anorexia and followed by fever

Pulmonary (inhalation): brief prodrome resembling acute viral respiratory illness, followed by rapid onset of hypoxia, dyspnea and high temperature, with x-ray evidence of mediastinal widening.

Meningeal: acute onset of high fever possibly with convulsions, loss of consciousness, Meningeal signs and symptoms; commonly noted in all systemic infections and has an epidemiological link to confirmed or suspected animal cases or contaminated animal products.

Ethical clearance

Permission to carry out the study was obtained from SNNP regional health bureau PHEM, Federal ministry of livestock and fishery and Regional bureau of livestock and fishery for both human and animal anthrax data.

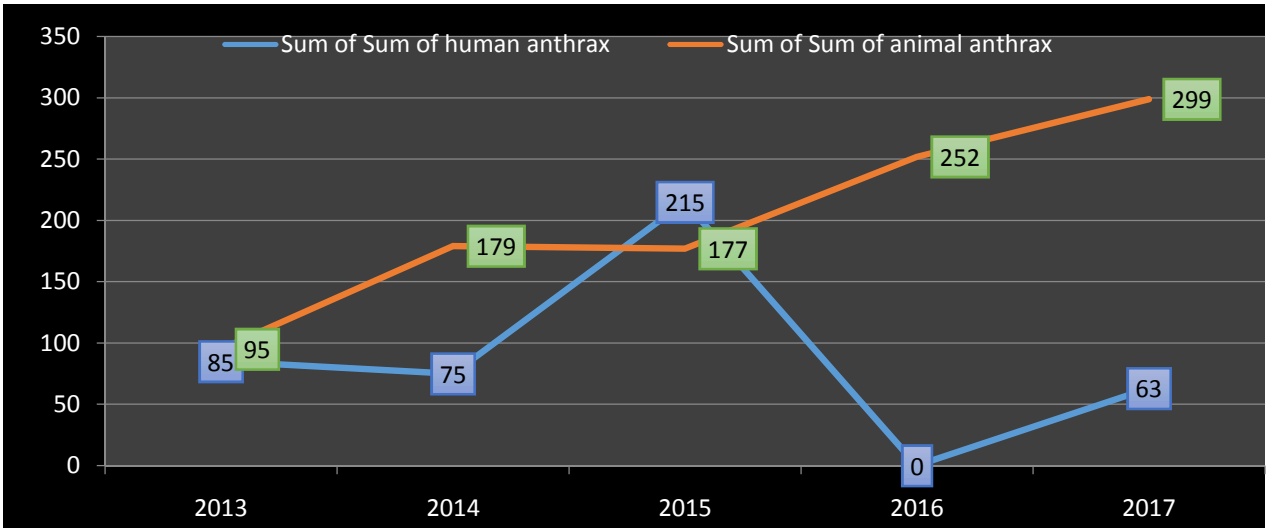
4. RESULTS

In the last five years (2013-2017) a total of 438 human anthrax cases and 3 deaths (CFR 0.7%) and from (2013 to half year of 2017) 1002 animal anthrax cases and 567deaths (CFR 56.6%) were documented in SNNPR. Human anthrax Cases and deaths were reported in weekly summary report of the regional PHEM, were as the animal cases and deaths were reported in monthly basis to regional and federal livestock and fishery bureaus and both are not accomplished with line list and the animal anthrax data for 2017 is a half year data. Highest number of cases was reported in 2015 (215 cases) for human cases and in 2017 (299 cases) for animal anthrax cases. The anthrax cases annual prevalence was 0.5/100,000 population per year for human cases and 1.01/100,000 population per year for animal cases.

year	Human anthrax cases	Animal anthrax cases	Human anthrax load per 100,000 population	Animal anthrax load per 100,000 population
2013	85	95	0.46/100,000	0.48/100,000
2014	75	179	0.4/100,000	0.9/100,000
2015	215	177	1.2/100,000	0.9/100,000
2016	0	252	0	1.3/100,000
2017	63	299	0.34/100,000	1.5/100,000

Table 8: human and animal anthrax cases load per year and per 100,000 populations, SNNPR.

Figure 9: Trend of Human and Animal Anthrax Cases by year (2013-2017), Ethiopia 2018.



4.1Human and animal anthrax cases by month

When we see the cases by month, the highest human cases were recorded in March and February 147 and 137 cases respectively which account 64.8% of the total cases. A total of 311 (71%) cases were reported from January to May and 127(29%) cases from June to December. Regarding animal anthrax, 251(37.6%) case was reported on January and 130(13%) on November, a total of 434(43%) cases from April to September and 568(57%) cases from October to March.

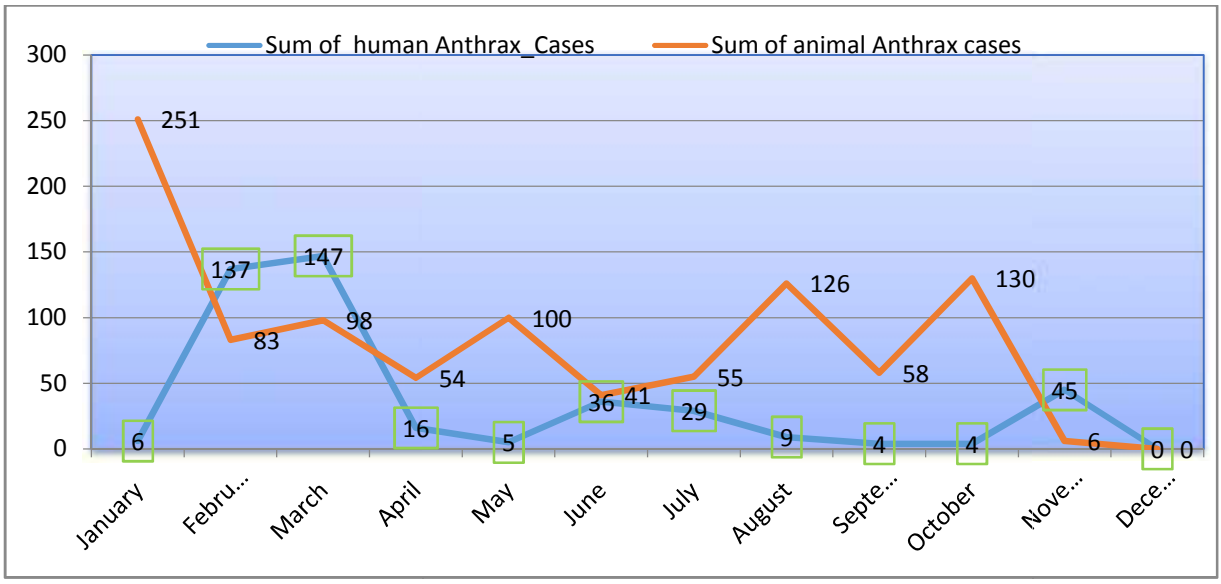


Figure 10: Human and Animal anthrax cases by month from 2013-2017, SNNPR, 2018

4.2 Human and animal anthrax cases, deaths, CFR and human to animal anthrax case ratio by zones.

All the human anthrax cases were reported from 5 zones and the majority of the cases were from South Omo zone 260(59.3%), followed by Segen peoples zone 68(15.5%). Out of 19 zones and special weredas in the region 14 zones were reported the animal anthrax case and the majority of cases were reported from Keffa zone 232(23%), South Omo zone 163(16.2%), and Gamo Gofa zone 152(15.2%). From 2013 to 2017, human anthrax case fatality rate (CFR %) was seen (6.3%) in Bench Maji and (0.4%) in South Omo zone, were as animal anthrax case fatality rate (CFR % is 84.1% in Bench Maji, 75% in Hadiya, 70.4% in Sidama, 86% in Keffa and 37.4% in South Omo zone.The Human: Animal anthrax case ratio was seen higher in Segen and south Omo zone which is 2:1 and 1.6:1 respectively and lower in Welaita(0:144) and Gamo Gofa (0:152) zones.

Zones/special districts	Human Anthrax Cases	human Anthrax Deaths	CFR (%)	Animal Anthrax Cases	Animal Anthrax Deaths	CFR (%)	Human/Animal case ratio
Basketo	0	0	0	0	0	0	0
Bench Maji	32	2	6.3	44	37	84.1	1:1.4
Dawuro	0	0	0	5	0	0	0:5
Gamo Gofa	0	0	0	152	62	40.8	0:152
Gedeo	0	0	0	42	14	33.3	0:42
Gurage	45	0	0	58	34	58.6	1:1.3
Hadiya	0	0	0	4	3	75	0:4
Halaba	0	0	0	15	5	33.3	0:15

Hawassa Town	0	0	0	0	0	0	0
Kefa	33	0	0	232	200	86.2	1:7
Kembata Tembaro	0	0	0	59	16	27.1	0:59
Konta	0	0	0	0	0	0	0
Segen	68	0	0	35	18	51.4	2:1
Sheka	0	0	0	0	0	0	0
Sidama	0	0	0	44	31	70.4	0:44
Silte	0	0	0	35	23	65.7	0:35
South Omo	260	1	0.4	163	61	37.4	1.6:1
Wolayita	0	0	0	114	63	55.3	0:144
Yem	0	0	0	0	0	0	0

Table 9: Human and animal anthrax cases, deaths, CFR and human to animal anthrax case ratio by zones.

4.3 All human anthrax cases by district and year

As shown in the table below, all the human anthrax cases were reported from 5 zones and 10 districts. Most of the human anthrax cases were reported from Bena Tsemay district of South Omo zone 222(50.6%) 31.3/10,000 and konso district of Segen peoples zone 67(15.8%) 2.4/10,000.

Zone	District	2013	2014	2015	2016	2017	Grand Total
South Omo	Bena Tsemay		1	163		58	222
Segen	Konso	43	6	18			67
Gurage	Abeshge		42	1	2		45
Kefa	Decha	33					33
South Omo	Hamer	1	13	2		5	21
South Omo	Dassenech			17			17
Bench Maji	Menit Shaha	6	10				16
Bench Maji	South Bench			15			15
Bench Maji	She Bench	1					1
Segen	Derashe	1					1
	Grand Total	85	72	216	2	63	438

Table 10: All human anthrax cases by district and year

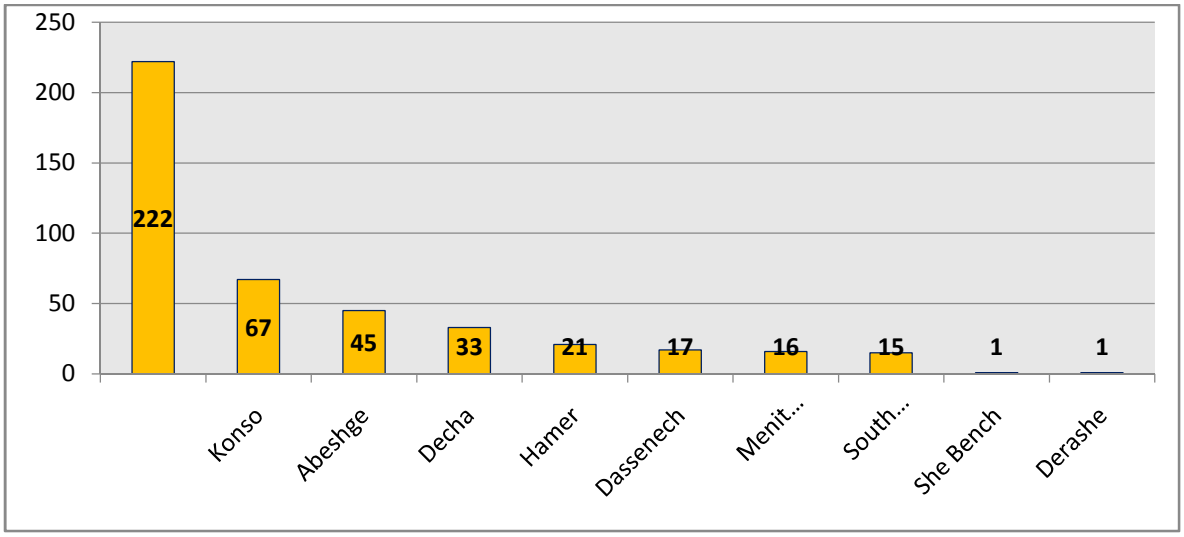


Figure 11: Human anthrax cases by district top to bottom SNNPR, Ethiopia.

4.4 Top 10 districts with highest animal anthrax case from 2013-2017.

From 2013 up to half year of 2017 a total of 787(78.5%) of animal anthrax cases were reported from the top 10 districts, out of this Gewata district of Kefa zone reported 199(19.8%) of the cases and Bena Tsemay district of South Omo zone was second by 148(14.7%) cases.

Zone	Wereda	2013	2014	2015	2016	2017	Total
Kefa	Gewata				2	197	199
S.Omo	Bena Tsemay			130	12	6	148
Gamo Gofa	Boreda					96	96
Welaita	Offa	35	37				72
Kembata Timbaro	Kacha-Bira				59		59
Halaba	Halaba Sp. Wereda			31	15		46
Bench Maji	Semen-Bench	10	34				44
Gedeo	Wenago				42		42
Gamo Gofa	Geze Gofa				41		41
Guragie	Abeshegie				40		40
	Total	45	71	161	211	299	787

Table 11: Top 10 districts by animal anthrax case from 2013-2017 SNNPR, Ethiopia.

5. DISCUSSION

In the last five years (2013-2017) a total of 438 human anthrax cases and 47 deaths and 1002 animal anthrax cases and 567deaths were documented in SNNPR. Prevalence of Human and Animal anthrax between 2013 and 2017 in the region was seen 0.5/100,000 population per year for human anthrax cases which is lower compared to the regions prevalence from 2009-2013 (1.3/100000) [12]. And in this study the number of human cases and animal cases reported was decreased by 38.5% and 24.8% respectively than the previous study [12]. This might be due to increased awareness of the community about the transmission of the disease, improved health education in rural and pastoralist areas and increased vaccination coverage of animals against anthrax.

Highest number of cases was reported in 2015 (215 cases) for human cases with case load of 1.2/100000 population and in 2017 with 1.5/100000 load (299 cases) for animal anthrax cases. Out of the total human cases reported between 2013 and 2017 Zero case were notified in 2016. The lowest cases for animal anthrax were recorded in 2013 (95 cases) and increasing number of cases were observed in the next consecutive years. Hence this condition needs proper intervention and further investigation.

The highest human cases were recorded in March and February 147 and 137 cases respectively which account 64.8% of the total cases and a total of 311 (71%) animal cases were reported from January to May. This is dry season, during this time the grass is short and animals are forced to graze very close to the ground. This increases chances of animals picking up anthrax spores in areas whose soils and pastures are contaminated with the spores [7]. Therefore, case of anthrax in animals is very common during this time increasing risk of human anthrax exposure.

As the surveillance data from 2013-2017 indicates, more cases of human and animal anthrax were reported from the regions pastoralist and semi pastoralist zones and districts. The Human: Animal anthrax case ratio was seen higher in Segen and south Omo zone which is 1:2 and 1:1.6 respectively and lower in Welaita(0:144) and Gamo Gofa (0:152) zones. Most of the human anthrax cases were reported from Bena Tsemay district of South Omo zone 222(50.6%) and konso district of Segen peoples zone 67(15.8%) were as Gewata district of Kefa zone reported 199(19.8%) of the animal cases and Bena Tsemay district of South Omo zone was second by

148(14.7%) animal cases. As we see from the data more human cases were seen in pastoralist Benatsemay and Konso districts but the leading animal anthrax case was reported from kefa zone gewata district. The increased human cases in Benatsemay and Konso district are due to the cultural makeup of the population. The population in these two adjacent districts used to undress the skin of dead animals in belief of 'taking at least the skin of the animal is the payment for the dead animal'. This leads to increased contact with infected dead animal which increases human cases.

The animal anthrax cases for 2017 was half year data and most of the suspected human cases and deaths were reported in weekly summary report, not accomplished with line list. This reporting system lack detail information that help to analyzed the case by different variables. Therefore variables like age, sex, urban and rural case distributions were not analyzed from the weekly summary report. In addition to these the form of anthrax, like coetaneous, inhalation and ingestion were not mentioned. This affects the completeness of the analysis.

Challenges and limitations

The lack of animal anthrax data in the regional bureau of livestock and fishery and incompleteness of the federal ministry data for the year 2017 was one challenge observed during the analysis. Anthrax is immediately reportable disease in Ethiopia according to the national PHEM Guideline. Therefore, any human anthrax case and death should be reported either case investigation form or with a line list. All of the cases and death were reported in weekly summary report format. This reporting format has no age, sex, urban and rural distribution. Moreover, reported anthrax cases are not classified as suspected, probable and confirmed as per the WHO recommended case definition.

6. CONCLUSION

Anthrax remains to be a major public health problem in the region. As per the analysis, increasing number of cases and fatalities for both animal and human anthrax were reported especially from the pastoralist and semi pastoralist areas like South Omo, Segen and Keffa zones of the region. High number of cases was seen in dry seasons of the years and increased number of human cases was observed in pastoralist districts of Konso and BenaTsemay due to the cultural behavior of these populations to undress dead animals. All zones are not reporting

Human suspected anthrax cases with the recommended standard format and incompleteness of the animal anthrax data for 2017 may affect the completeness of the analysis.

7. RECOMMENDATION

- Data quality and completeness plays important role to uncover the disease status of a country or a given region and to apply proper control and prevention strategies, so that the regional bureau of livestock and fishery have to have a proper recorded data of years for list A and zoonotic diseases.
- The federal ministry of livestock and fishery has its own data base but they have to complete the data for each year and they have to give emphasis on supporting regional bureaus to have their own uniform and connected data bases.
- The regional bureau of health and federal ministry of health both have to work on human anthrax case and death to be reported with daily epidemic reporting format or a line list and with case-based immediately and also the case should be reported in specific form of the disease.
- Control of anthrax depends on the integration of veterinary and human health surveillance and control program. Animals should be vaccinated with anthrax vaccine before the season of anthrax. I recommend strong routine cross-notification between the veterinary and human health surveillance systems should be part of any zoonotic disease prevention and control programs and close collaboration between the two health sectors is particularly important during epidemiological investigations.
- Through traditional community leaders, health extension workers and animal health assistanceshealth educations have to be strengthen in pastoralistareas to wards proper dead animal handling and environmental sanitation to avoid contact with dead animals so that to decrease the risk of human anthrax.
- All regions and Ministry of Health and Ministry of livestock and fisheries should strength their surveillance system and early preparedness. Continuous data analysis and feedback to all stakeholders should be conducted on regular bases so as to improve quality of both human and animal surveillance data.

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CHAPTER III –EVALUATION OF SURVEILLANCE SYSTEM

Surveillance System Evaluation of Hawella tulla sub city Hawassa city Administration SNNPR, Ethiopia, 2019.

ABSTRACT

Introduction: Public health surveillance is an ongoing systematic collection, analysis, interpretation and dissemination of data regarding a health related event for the purpose of public health action to reduce morbidity and mortality and to improve health. The main objective of this study is to evaluate the public health surveillance system of Hawella Tula subcity.

Methods: Cross sectional study was conducted from March 05 – March 11/2019 in Hawella Tula sub city in Hawassa city administration. Purposely we selected one health office, two health centers and four health posts. Data collection was done by face to face interview using questionnaire/checklist and observation of tools for surveillance and secondary data review were done. The collected data was reviewed and processed by using Microsoft Excel.

Results: Thetotal population under surveillance was 138,979. We found out thatIn the past 6 months the sub city PHEM officer and HC focal persons took training on surveillance system but only 1(25%) of the interviewed (n=4) health extension workers have given the training**.** There is no EPRP in all levels and the RRT has no regular meeting. It is seen that surveillance guide lines and standard case definitions are not available in HP level. The evaluation found that there is supervision activity in the sub city but there is no written feedback in all levels. There is no trend of data analysis in the sub city however, the timeliness and completeness of weekly data for 2010EFY was found 100%. All the respondents agreed that the existing surveillance system was simple, useful and flexible.

Conclusion and recommendations: The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively. In Hawella Tula sub city the surveillance system was in place and help full for detection of the diseases and outbreaks. However efforts should be continue to improve the system on data analysis, proper understanding of case definitions in HP level and trainings should be given on surveillance system for health extension workers. There should be written epidemic preparedness and response plan and well written feedbacks of supportive super vision at all visited health facilities and in the health office.

Key words: Surveillance system evaluation, Hawella Tula sub city, 2019.

1. INTRODUCTION

Public health surveillance is an ongoing systematic collection, analysis, interpretation and dissemination of data regarding a health related event for the purpose of public health action to reduce morbidity and mortality and to improve health. In short it also defined as “information for action” [1]. Proper understanding and use of public health surveillance data helps health workers at the health units and health official at different level of the health system to set priorities, plan interventions, mobilize and allocate resources, detect epidemics early, initiate prompt response to epidemics, and evaluate and monitor health interventions. It also helps to portray the ongoing pattern of health and health-related states and events, to assess public health status, trigger public health action, define public health priorities and assess long term disease trends. Hence a functional public health surveillance system is essential for defining health problems and taking actions. It is carried out through a system in the health sector which has legal support and extending from the central health authorities down to the peripheral health facilities up to the community level through sets of communication channels, which include upward reporting and down ward feedback mechanism, as shown below on the figure [1-3].

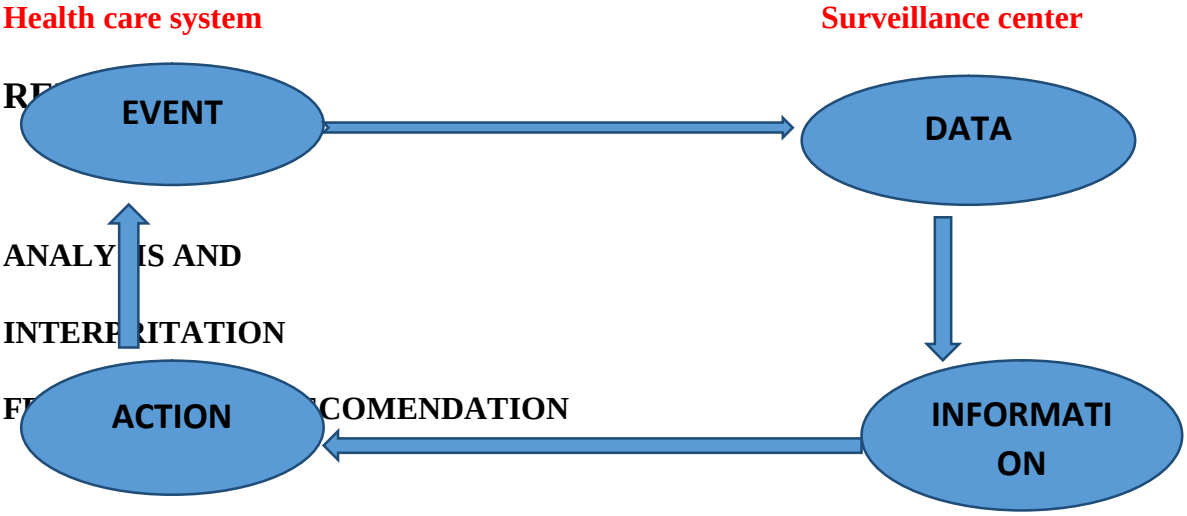

Figure12:Simplified flow chart of surveillance loop, Source: CDC Surveillance system evaluation ppt.

Public health departments at local, state, and national levels routinely use different surveillance systems. Some of these systems include: vital statistics, disease reporting, and surveys. There are more specialized surveillance systems, including sentinel surveillance, zoonotic disease

surveillance, adverse events surveillance, Syndromic surveillance, disease registries, and laboratory surveillance. Some of them are more useful for certain diseases than others, but each fills a specific need. All these systems can be used to monitor disease trends and plan public health programs for a wide variety of conditions [5].

Since 2008 the Federal Ministry of Health launched a reform and restructuring of the health sector aimed at bringing effectiveness and efficiency in execution of various work by using business re-engineering process (BPR) as a tool. Based on this, the Federal Ministry of Health identified 8 core processes that will enable to fulfill its visions and missions. Public Health Emergency Management (PHEM) was one of the core processes identified to ensure rapid detection of any public health threats, preparedness related to logistic and fund administration prompt response to and recovery from various public health emergencies, which range from recurrent epidemics, emerging infections, nutritional emergencies, chemical spills, and bioterrorism [3, 4].

The Ministry currently identified 21 top priority diseases and conditions (13 are immediately reportable and 8 weekly reportable) for surveillance activities that are epidemic prone internationally required under IHR 2005 and diseases targeted for eradication and elimination. These diseases are set to be reported as mandatory notification by designated bodies through different means of communication (telephone, email and paper based reporting) to the next level according to the reporting period which is immediately or weekly [4].

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 evaluation of public health surveillance systems should involve an assessment of system attributes, including simplicity, flexibility, data quality, acceptability, sensitivity, representativeness, timeliness, and stability and the evaluation should emphasize those attributes that are most important for the objective [1, 2].

Rationale of the study

Surveillance system evaluation is an important tool to assess the capacity of the system to meet its purpose and objectives; to improve its operation and to optimize the available resources

[6].Hence evaluation of Hawella tula subcity surveillance system provides information if theSurveillance system is useful, describes the specific attributes, identifies areas that needsimprovement and make recommendations to improve the quality, efficiency and usefulness ofthe system. In addition it can be used as a base line for future evaluation of the system. Therefore the findings of this evaluation can be used as an inputto strengthen the overall surveillance system activities of the sub city to achieve its intendedobjectives and purpose.

2. OBJECTIVES

General objectives

- To evaluate the public health surveillance system of Hawella tula subcity.

Specific objectives

- To describe the existing surveillance system of the sub city.
- To assess core and supportive functions of the system.
- To assess surveillance system key attributes.
- To assess areas which need further improvement.

3. MATERIALS AND METHODS

Study area

This study was conducted in Hawassa city administration in Hawella Tula sub city in SNNPR. As we all know Hawassa city is the capital of the SNNP regional government and has 8 sub cities and Hawella Tula sub city is one of the 8 sub cities in the city administration and is 285 km away from Addis Ababa in south direction. The sub city has a total population of 138,979 and is divided in to 12 administrative kebeles. Hawella Tula sub city has 7 health centers and 19 health posts with a total of 68 health extension workers.

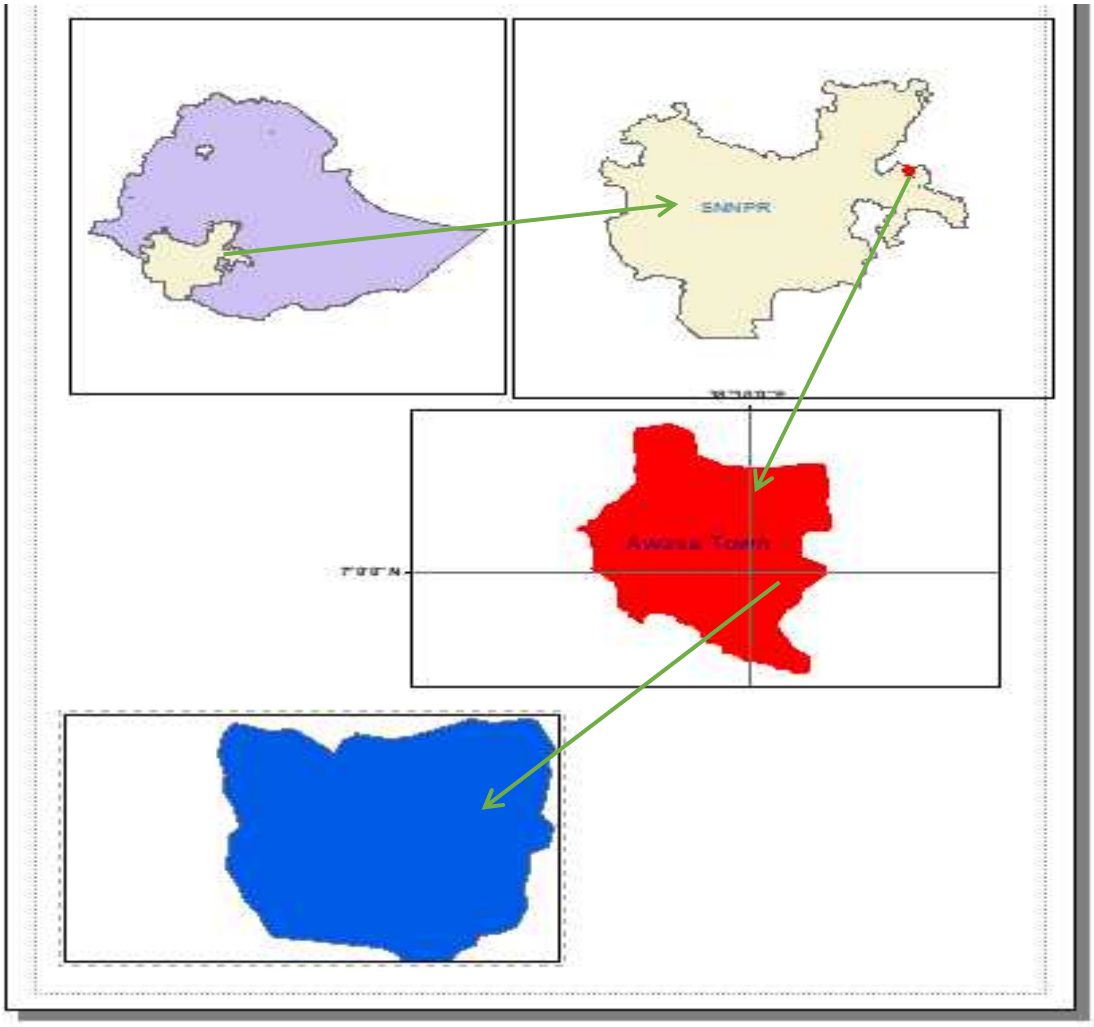

Figure 13: Administrative Map of the study area Hawella Tulla sub city, SNNPR.

Study period and Study design

The study was conducted from March 05 – March 15/2019, by applying descriptive Cross-sectional study design.

To describe the surveillance system of the sub city we assessed, the structure and the core activities of the surveillance system in the sub city in general and in the study facilities in particular. The core activities and components included were case definitions, flow charts of the surveillance system and information flow inthe surveillance system, population under surveillance, case detection, data collection, registration, reporting, analysis and result dissemination and resources used in the surveillance system. The evaluation of the performance and attributes of the surveillance system involved, assessment of the usefulness of the surveillance system, simplicity of the system, flexibility, quality of the data, acceptability, representativeness, timeliness and stability of the surveillance system.

Sample size and sampling method

Convenience sampling was used to select the study units were health facilities and sub city health office were selected. A total of 7 study units/sites were included in the study, these were sub city health office, two health centers and four health posts were selected by convenience method of sampling.

Data collection methods

Surveillance system evaluation questionnaire from updated CDC guideline for evaluating public health surveillance systems was used to collect data [1].

Ethical issues

Consent letter was written to Hawassa city administration and Hawella Tula sub city health offices from regional health bureau to cooperate the principal investigator for the matter of realizing that the evaluation is beneficial to the sub city administration and gap pointer to the Hawassa city administration and regional health bureaus.

Data analysis

Data was cleaned, entered and analyzed using the Microsoft Excel work sheet 2007 and qualitative data were summarized to supplement the quantitative findings.

Operational definition

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

Accessibility: - Ease which statistical data can be received from the office. This lets in the ease with which the existence of information can be found out, as good as the suitability of the shape or medium through which the data can be accessed. The monetary value of the information may also be an aspect of accessibility for some users.

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

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

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

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

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

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

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

Timeliness: - Interval between the occurrence of an adverse health event and the report of the event to the appropriate health agency or the identification of that agency of trends or outbreaks or the implementation of control measures

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

4. RESULTS

Population under surveillance

The national public health emergency management targets all the population in the country to be under surveillance for all the twenty-one priority diseases. Hawella Tula sub city uses the same structure, with a total population of 138,979 in 2019 (projected from the 2007 national census). The population under surveillance for the selected health facilities was given below on the table.

NO	Name of assessed institution	Population under surveillance	Number of health centers	Number of health posts
1	Tula sub city health office	138,979	7	19
2	Tula health center	14,579	1	3
3	Chefe health center	25,578	1	4
4	Chefe kuticha jebesa health post	6225		
5	Dato Odahe health post	10051		
6	Kulba health post	5868		
7	Tula rural health post	8885		

Table 12: population under surveillance in selected health facilities Hawela Tula sub city, SNNPR 2019.

System structure and function

In the sub city health office there is one expert employed for the PHEM core process and in the all the health centers there are assigned focal persons for the PHEM structure which collect and compile weekly reports from health extension workers and send to the sub city health office. But the health office believes that only one staff in the office is inadequate for the work and also the personnel's assigned in health centers should be permanent employees rather than focal persons to give attention to the work.

Communication and reporting system assessment

All the assessed HCs, HPs and the sub city health office expert have a mobile phone service and they have the address of respective HC surveillance focal persons and the sub city PHEM officer. They meet regularly on weekly bases through phone to collect reports. The health extension

workers compile there reports and send it by phone to respective HC surveillance focal person on Monday and the focal persons send the report to the sub city up to Tuesday mid-day by hard copy or through phone depending on the their distance from the office and the sub city PHEM officer send it to the city administration up to Wednesday mid-day by hard copy they have no email or internet access.

Availability of surveillance documentation, registries and forms

The assessment found out that there is a copy of national guide line of PHEM in the health office and in the two assessed HCs but there is no PHEM guide line in all 4 assessed HPs. There is no rumor log book in all evaluated facilities and in the health office too. When we see availability of standard case definitions for priority diseases all HCs and the health office have case definitions but they did not posted it whereas, all the health posts have no case definitions.

In all assessed 6 health facilities and health office there are no case based reporting formats for out breaks and guide lines for specimen collection handling and transportation to the next level. Only one HC (50%) have a line list for reporting out breaks.

Data analysis, computer skill and training assessment

In the past 6 months the sub city PHEM officer and HC focal persons took training on surveillance system but only 1 (25%) out of 4 interviewed health extension workers have given the training. 1 (50%) of the HC and the sub city PHEM expert have computer but they lack computer skill on MS excel and they never analyzed surveillance data and the data entry for reports was done manually by hard copy.

Epidemic response and preparedness assessment

There is no EPRP in all levels but there is RRT in the HCs and in the health office but they don’t meet in regular basis. There is no protocol for case management for epidemic prone diseases there is no epidemic management committee and no budget for epidemic response in all levels. In all the HCs and HPs there is no shortage of emergency drugs and stocks. Regarding transportation only the PHEM expert in the health office has a motor cycle but during emergency the health offices car was used as a means of transportation.

Outbreak investigation and case confirmation

There is no outbreak in 2010 EFY in the sub city and they didn't undergo outbreak investigation. There was no outbreak investigation check list in all levels. All the interviewed professionals believe that, health facility staffs were responsible for outbreak investigation and they send samples to regional lab at Hawassa city.

Supervision and feedback assessment

Regular and planed supervision and appropriate written feedback by higher officials is mandatory to strengthen the surveillance system. Regarding this all the visited HPs have been visited by zonal and sub city health officials 3 times in the last six months but they didn't get a written feedback in return. The HCs have no documented supervision plan and no supervision check list but they go randomly to the health posts and they visit them but still they don't give feedbacks in documented way. In other hand the regional health bureau and the city administration health office have visited the HCs twice in the last six months but the same to the HPs they don't give feedbacks in appropriate written way they give suggestions in verbal way (orally on the spot).

Usefulness of the surveillance system

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

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

Description of each system attributes

Simplicity: the interviewed professionals in all the institutions agreed that the surveillance system allows all level professionals to fill record and report data on time. They also believe that the system allows updating data on the cases and has necessary information for investigation. All the respondents replayed that it takes 10-15 minutes to fill the report format. The case definitions for priority diseases are well understood by HCs professionals but as I said before since there is

no case definition in HPs there may be gap of understanding the case definitions by health extension workers.

Flexibility: all the respondents believe that current reporting format contains additional spaces at the end for both weekly and immediately reportable diseases with a phrase: others, it can accommodate newly occurring health events/disease to fill on without any difficulty. Also, weekly reporting format can be modified based on current situation and different concerns.

Data quality: Reporting formats of weekly and immediately reportable diseases are well understood at sub city and health center levels. But, due to lack of training some health extension workers were observed to be confused with this format. At health post level, due to many health extension workers are not good in English they did not understand some variables and phrases on reporting formats. Major problems identified at different levels on filling reporting format are stated as follow:

- Date of sent and received, reporter and receiver information did not written on reporting formats
- Duration of activity report(week at which activities were performed) is missed during report compiling mainly at health post level
- Poor documentation of copies of reports at health center and health post levels

Acceptability: in the sub city all reporting agents are well engaged to the surveillance activities and they send reports on time using the current and appropriate surveillance format. But the sub city PHEM officer believes that high turnover of professionals and temporary delegation of PHEM focal persons at health center level and lack of trainings for newly engaged health extension workers may affect the acceptability of the surveillance.

Representativeness: the surveillance system enabled to follow health and health related events in the hall community and both urban and rural population of the sub city are equally benefited from the system. But the interviewed professionals suggested that the reporting format lacks some socio demographic variables like sex and age. The potential health service coverage of visited sub city is above 100%, providing that the surveillance system in the sub city was representative.

Timeliness and Completeness: the investigator tried to see 1 year (2010 EFY) reports of the sub city and found out that all expected sites are reporting and they are reporting on time making the timeliness and completeness of reports 100%.

Stability: The surveillance system ensured to function in proper way and there was no time or condition by which the surveillance system is interrupted even during some instability and security problems occurred in the past few months in the city of Hawassa the surveillance system was not interrupted and this shows its stability. Regarding resources at 1 HC we have seen that there is shortage of reporting format so that the PHEM focal uses printed copy of the format for reporting (the format was identical to the standard format but doesn't have the logo of EPHI).

5. DISCUSSION

Surveillance system evaluation is a periodic assessment of effectiveness and efficiency of a program towards its purposes and objectives. As all we know the very base of the surveillance system were health extension workers and health posts so, training of health extension workers about the objective, the aim, how it works and general befits of the surveillance system is mandatory. However, out of visited 4 HPs only one health extension worker has taken training on surveillance system. This could be considered as a very serious defect in the sub city surveillance system. Without knowing the aim of performing surveillance system activities, staff may lose commitment to the system, which can result in poor case detection and poor surveillance system quality outcome. In addition lack of national guide lines and proper case definitions in health posts implies that the case detection quality faces serious problems.

Supportive super vision and feedback are a key function of public health surveillance system. At all visited level there is no regular supportive super vision supervision check lists and supervision plan and there is no strong written feedback. As region and city administration has essential role in preparing and disseminating supportive super vision and feedback of surveillance activities for health facilities in different method, it was not done well mainly in written forms. Lack of budget line either from government or non-governmental organizations for surveillance activities at sub city level remains a major problem to run tasks under PHEM towards their objectives.

Surveillance data analysis is help full to see trend of diseases and to turn raw data in to useful information which can be used for action. In all levels there is no data analysis at all this may be due to limited computer skill of professionals but at least at sub city level there should be regular data analysis to determine what should be there next step.

There is no written epidemic preparedness and response plan at all visited levels. This may cause weak case detection and response during epidemics. The aim of preparedness is to strengthen capacity in recognizing and responding to public health emergencies through conducting regular risk identification and analysis, establishing partnership and collaboration, enhancing community participation and implementing community-based interventions and strategic communication during the pre-emergency phase and ensuring their monitoring and evaluation [1]. There is RRT in HCs and health office level but it was identified that rapid response team is functional only during emergencies.

It was agreed by all respondents that the surveillance system is flexible for newly occurring health and health related events. There are no problems on the simplicity of the system regarding case definitions of selected diseases, reporting system and additional data collected on cases at all visited levels. Even though reporting formats of priority diseases are easy and clear to fill for datacollectors at sub city and HCs level, some gaps were observed on quality of reporting system at HP level since health extension workers did not get any training on surveillance activities. Timeliness and completeness of report is important for timely public health interventions, regarding this both timeliness and completeness of reports for 2010EFY was found 100% in the sub city.

6. CONCLUSION

The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively. In Hawella Tula sub city the surveillance system was in place andhelp full for detection of the diseases and outbreaks.However efforts should be continue to improve the system on data analysis since data was not analyzed, interpreted, and used for action in all health level. Concerning reporting format other than weekly report form, there is shortage of case-based report form, line list report form, rumor books and standard case definition at health post level. Training was not given for health extension workers on surveillance system. There was no budget line either from government or non-governmental organizations for surveillance activities at sub city level. There is no written feedback, epidemic preparedness and response plan and regularly base of supportive super vision at all visited health facilities. All the respondents agreed that the surveillance system is simple and flexible and well accepted by all assessed health facilities and health office.

7. RECOMMENDATIONS

- Training should be given for health extension workers on surveillance activities and data quality to improve active case search and reporting system.
- Utilization of National PHEM guideline and different manuals for management of prioritized diseases should be optimized at all levels; mainly at health posts.
- Standard and community case definitions should be given to health extension workers and should be posted in all health posts.
- Data analysis for prioritized diseases at sub city and health facility level should be performed regularly.
- Strong supportive supervision and well written feedback should be maintained in regular basis at all levels.
- Epidemic preparedness and response plan should be available in all levels.
- RRT teams should meet in regular basis at all levels.
- Budget should be secured for surveillance activities at the Sub city.

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CHAPTER IV - HEALTH PROFILE DESCRIPTION REPORT

Health Profile Assessment of Wensho district, Sidama zone, SNNPR, Ethiopia, 2018

ABSTRACT

Introduction: health profile assessment 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 process that uses these results to develop strategies to improve the health status of the community.

Objective: To assess and describe health and health related issues of Wensho district.

Methods: we conducted a cross-sectional descriptive study in Wensho District, Sidama Zone from February 5 up to February 15 2018. We used Interview and standard check-list to collect health and other health related data from different sectors.

Results: Wensho district has 18 kebeles with estimated total population of116135 with 58991 (50.8 %) males on 2017, from the total population around 109748(94.5%) were rural population.The district has 30 primaries (1-8) and 2 secondary (9-10) schools and the overall student population in the district for the year 2010E.C was 35150 from this 19240 (54.7%) were males.The district has 5 health centers with ratio of 1:23786 health center to population ratio and 18 health posts with a ratio of 1:6607 health posts to population ratio and there are 2 private health facilities in the district. Trauma was the leading cause of outpatient visit in adults in the district, which accounts for 15.59% (n=1082) of the ten top outpatient visit in 2009 EFY followed by acute febrile illness.

Conclusions: The leading cause of morbidity in Outpatient visit in the district is trauma. Hence the health official's in collaboration with the district police and security offices should have to work hard on prevention and control of trauma, specially the districts traffic polices should work hard on controlling of non-licensed drivers and over loading of passengers on motor cycles and all motor cycle drivers have to wear protective helmets in addition regular road traffic educations must be given in schools and community level.

Key words: District Health profile, Wensho District Sidama zone SNNPR, Ethiopia

1. INTRODUCTION

Community 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 process that uses these results to develop strategies to improve the health status of the community. Community health assessment also includes products, such as a community heath profile and a community health improvement plan [2].

Currently, the concept of health as defined by the World Health Organization (WHO) is —a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Taking this perspective, one moves beyond disease absence as defining health status to one that incorporates the complex perceptions about health and health conditions. Health Profiles are about the health of people and about the conditions in which they live [1].

A community health profile is a comprehensive compilation of information about a community. The data in a profile reflects the health of a given community from many different angles. A community can refer to a zone, a district, a locality within a district, a tribe, or a multi-zonal region. The information may include data already collected and published about a community or information collected by the organizations or individuals creating the profile [2].

Data will be collected analyzed and disseminated for decision on the important information available. Morbidity, mortality, socio-demographic information, vital statistics and other data are collected and analyzed in order to address evidence based public health problems and support to take public health action [1]. District health data is important for program planning, implementation and evaluation of health care. The purpose of this project is to assess and describe Wensho district health profile which will be helpful for understanding of the health profile and use for program planning and intervention.

Rationale of the study

- Describing of health profile is helpful to know and understand morbidity, mortality, socio economic, and predict future diseases status of Wensho district of SNNPR.

- Information that will be generated from district of Wensho is useful for taking public health action in the district.

2. OBJECTIVES

General objective:

- To assess and describe health and health related issues in Wensho district.

Specific objectives:

- To assess the existing health infrastructure of the Wensho district
- To assess endemic diseases in the district.
- To assess disaster status of the area.
- To know vital statistics and health indicator.
- To present the districts health needs and issues so that they can be prioritized for action.

3. METHODOLOGY

We conducted a cross-sectional descriptive study in Wensho District, Sidama Zone from February 5 up to February 15 2018. We have reviewed available data from the districts health office, agricultural office, finance and economic office, water resources office, culture and tourism office, educational office and others. Standard check list is used for collection of health and health related information of the district and also Interview and discussion with concerned health office heads, experts, and health professionals had been carried out. The data is analyzed and processed by using epi-info and Microsoft excel. Regarding Ethical issues, Official letter was written from the regional health bureau to Sidama zone health bureau and Cooperation letter was given to all sectors from where the data is gathered. Finally the findings are communicated to Wensho district health office and other stake holders.

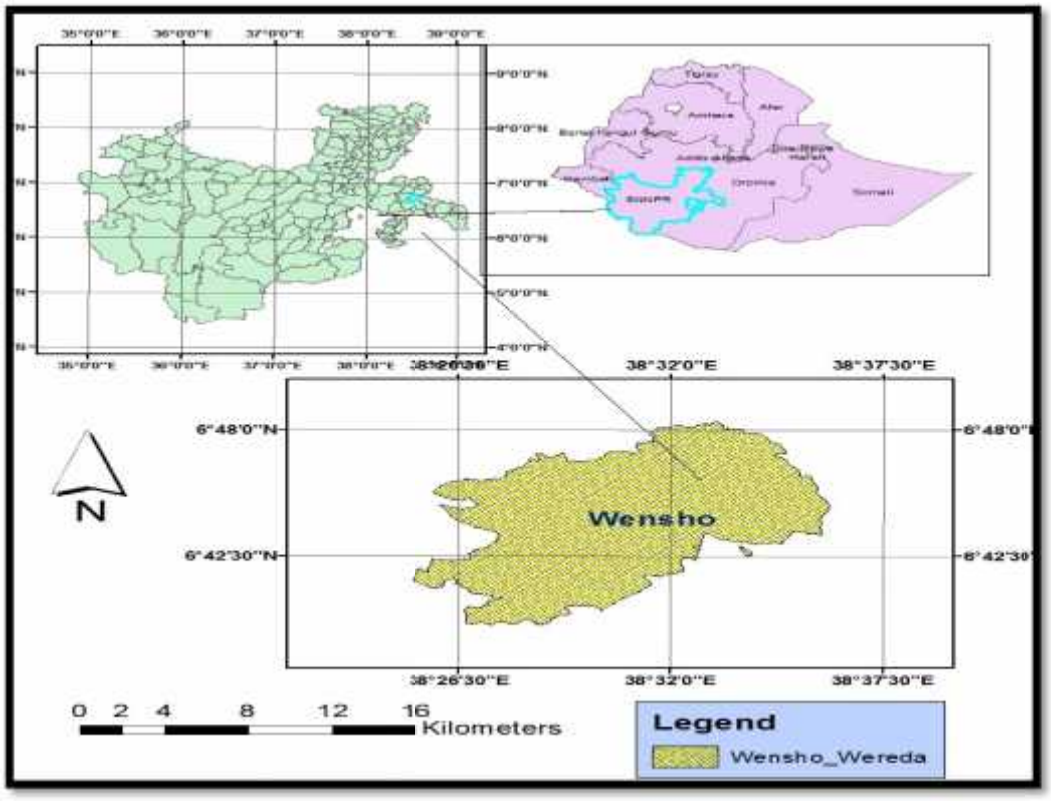


Figure 14: Map of Wensho District, Sidama zone SNNPR, Ethiopia, 2018.

4. RESULTS

Historic Aspects and Establishment

Wensho District has been established as an independent district in July 7, 1998 E.C. which was earlier merged with Dale district. The name Wensho has come from, Sidamigna word meaning “full”. And the district is the center of cultural judgment and traditional administration of the Sidama people and it is the launching place of Sidama people New Year celebration “CHAMBALALA”.

Geography and Climate

Wensho is one of the 19 districts found in Sidama zone of SNNP Region. And geographically the district shares boundaries with Gorche district andDale district in north, Aletawendo district in south, Dale district in west and Arbegona district in eastern part. The climate was mostly sub-humid (Weynadega) with an overall average minimum and maximum temperature of 13 Oc and 27Oc respectively and average of 23Oc. The altitude ranges from the highest 2020asl to the minimum 1400asl and the total catchment area of the district is 14640.33 hectare from this highland accounts for 25% were as the rest 75% of the district is mid land. Total annual average rain fall is 1600ml which ranges from the maximum 1800ml to the minimum 1400ml.

The districts capital Bokaso is accessible with pista road from the regional capital city Hawassa, it is 57km far from Hawassa (regional and zonal capital), 12km far from Yirgalem town and 332km away from Addis Ababa (the countries capital) in Southern direction.

Administrative set up

Wensho district has a total of 18 kebeles from which 17 are rural kebeles and 1 is urban kebele wich is the capital Bokaso town. There are no NGO’s in the district.

Demographic Information

Wensho has a total estimated population of 116135 with 58991 (50.8 %) females and 57144 (49.2%) are males on 2017, from this 6387(5.5%) were urban population and the rest 109748(94.5%) were rural population. The districts have a total of 24194 households with

average household of 4.8 people. Under one years old children constitutes 3703 (3.2%), under five 55580(47.9%), women of child bearing age 27059(23.3%).

Ethnic Compositions

Sidama ethnic is the majority in the district and Amhara ethnic is the second majority. Sidamigna (Sidamic language) is the dominant that most people speak it and it is the official language in the district followed by Amharic language.

Productivity and Income

The main source of income in the district was agriculture and livestock rearing. The total land density of the district is14640.33ha out of this 10764ha was cultivated and 2785.25ha was grazing land. Coffee, Enset (False banana), Avocado, and Barely are the main crops in the district and the farmers utilize fertilizer 100%. The agriculture generates 18,298,772ETB and income from livestock is 17,223,428ETB per year and average income per house hold per year was 10500ETB for a total of 24,194 households. The district has a total of 1703 public servants from which 1300 are male and 403 were females. From the total population 1829 males and 766 females are jobless. The district allocated 91,654,872ETB for operational and workers salary budget in 2009 E.C, out of this 665,814ETB was allocated for the health sector and other programs allocated 800,000ETB for ONEWASH programs (for hygiene and sanitation programs).

Education and School Health

There were a total of 30 governmental schools in the district. Out of this 28 were primary schools (1-8) and 2 were secondary schools (9-10) there is no preparatory school and TVET college in the district. In 2010 E.C the district education sector targeted to enroll 42453 students and enrolled 35150 students (87.75%). Among the total students 19240 (54.7%) were males, and 15910 (45.3%) were females. 33291(94.7%) students were enrolled in primary level (1-8), 1859 (5.3%) students were enrolled in secondary schools (9-10). Out of students enrolled in primary school 18128 (54.5%) were male students and 15163 (45.5%) were female students. Out of students enrolled in secondary 1112 (59.8%) were male students, and 747 (40.1%) were female students. In 2009E.C a total of 555 students were dropped out from schools because of different family problems.

Out of the total schools in the district 20 (60%) schools have had access to safe water supply, whereas the rest 10(40%) schools have not had access to safe water supply. Out of 30 schools 28schools have had functional latrine with separate rooms for girls and boys and 20 schools have WASH committee membersandall the 30 schools have HIV-AIDS clubs.

Infrastructures (Public Service Facilities)

Communications: The wireless net-work coverage is 100% across the District. Almost all Kebeles have got wireless telephone services but don't have home phone except one kebele which is the capital Bokaso.

Transportations: out of 18 kebels 15 kebeles have road accesses but the rest 3 kebeles have no access of transportation even motor cycles can't reach them.

Water Supply: The District safe water supply was 43.3% and the main source of water supply is on spot spring waters. There are a total of 167 water supply structures in the district out of this, 151 were on spot spring water, 3 are deep wells(from which 1 is nonfunctional), 4 shallow wells and l9 hand dug wells.

Energy Supply:Electric Power supply in the district was 22%,out of 18 kebeles in Wensho District 1 town kebele and 3 rural kebeles have 24 hours electric power supply.

District Health System and infrastructure

Organization of Wensho District Health Office (Organo gram)

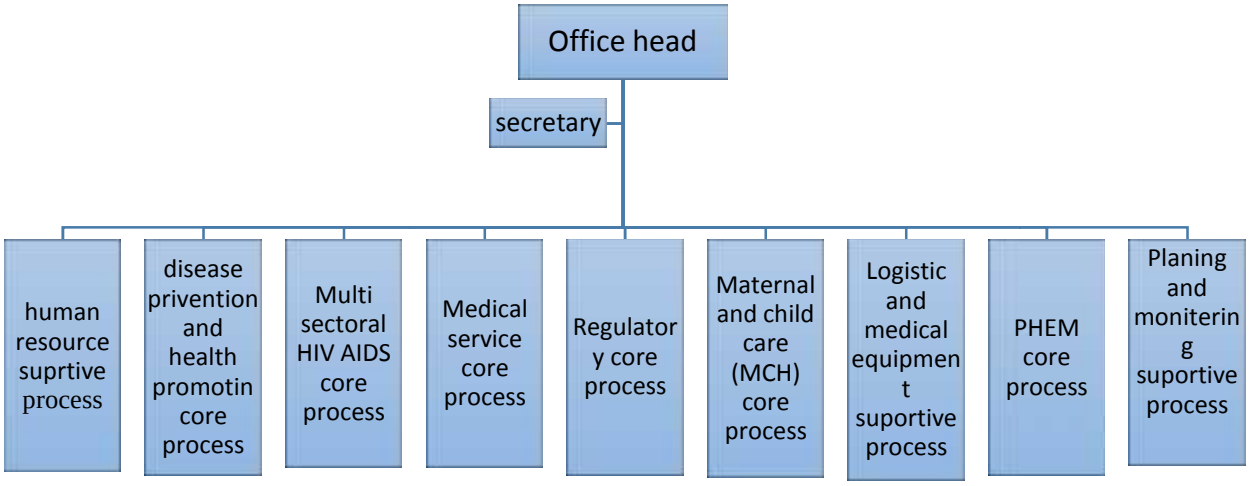


Figure 15: Oregano-gram of Wensho District Health office, Ethiopia, 2018.

The district has 5 health centers with ratio of 1:23786 health center to population ratio and 18 health posts with a ratio of 1:6607 health posts to population ratio and there are 2 private health facilities in the district. Out of the 18 health posts only 13 (72.2%) have access to transportation, none of the health posts have electric supply and only 3(16.6%) health posts have pipe water supply. Regarding the health centers all the 5 health centers have transportation access, 2 of them have telecommunication facilities, and 4 health centers have electric power supply and pipe water access.

Human resource and man power in health institutions

No	Profession type	Education level	No of professionals			Remark
			M	F	Total	
1	**Health officer**	degree	5	8	13	
2	**Nurse Bsc**	degree	11	0	11	
3	**Environmental health Bsc**	degree	2	1	3	
4	**Clinical nurse**	diploma	19	9	28	
5	**Public health nurse**	diploma	8	4	12	
6	**Laboratory technician**	diploma	7	4	11	
7	**Pharmacy**	diploma	4	0	4	
8	**Health information technology (H.I.T)**	diploma	2	3	5	
9	**Comprehensive nurse**	diploma	1	1	2	
10	**Mid wives**	degree	1	0	1	
11	**Mid wives**	diploma	0	11	11	
12	**Health extension worker**	Level 4	0	9	9	
13	**Health extension worker**	Level 3	0	44	44	

Table 13: Number of health professionals by educational level in health facilities of Wensho district 2018.

Human resource and man power in district health office

NO	Office Department (processes)	Deployed	Required	Gap
1	Disease prevention and health promotion	3	4	1
2	Maternal and child health care	1	3	2
3	Regulatory	1	5	4
4	Medical services	3	4	1
5	human resource	4	5	1
6	Logistic and medical equipment	1	3	2
7	Planning and monitoring	1	1	0
8	Public health emergency management	1	1	0
9	Multi sector H.I.V AIDS	3	3	0
	TOTAL	**18**	**29**	**11**

Table14:trained man power in Wensho district health office, 2018.

Disaster status in the district

There was no history of any disaster in the district in the last 3 years from2015 up to 2017.

Vital statistics and indicators

Health indicators and vital statistics are important for estimation of the district's or country's development. The table below shows the vital statistics and health indicators of the District in 2009E.C.

NO	Indicators	Number	Percentage	Remark
1	Total population	116135	100	
2	Male	58991	50.8	
3	Female	57144	49.2	
4	Under 1 year population	3703	3.2	

5	Under 5 year population	55580	47.8	
6	15-49 year population	27059	23.3	
7	Pregnant women	4370	3.8	Pregnant women attended the first ANC
8	Infant mortality rate	No data		
9	Postnatal mortality rate	No data		
10	Total live birth	1578	1.36	
11	Total still birth	01		
14	Crude birth rate			13.6 in 1000 population
15	Crude death rate	No data		
16	Maternal mortality rate	2		
17	Contraceptive prevalence rate		90	
18	Contraceptive acceptance rate		92	

Table 15: Distribution of vital statistics in Wensho District, Ethiopia, 2009E.C

Maternal and child health service coverage

When we see the Antenatal care (ANC) rate ,the districts health office in 2009E.C. expected 3925 pregnancies to attend the first Antenatal care (ANC) and achieved 4370 (111%) pregnancies and from the expected 3925 pregnancies to attend the fourth ANC they achieved 3837(98%) out of this the percentage of deliveries attended by skilled birth attendants was 2648 (75%). The contraceptive prevalence rate and the contraceptive acceptance rate are 90% and 92% respectively.

Immunization coverage of under one year children

Even if there are some shortages of cold chain management tools like fridges, tags and registration book, Wensho district immunization activity was good and also cold chain system was managed by EPI trained stuffs. Immunization coverage in 2009E.C, for children under one years of age was summarized in a table below.

No	Type of vaccine	Number	Percentage
1	BCG	3575	91%
2	OPV-1	3731	100%
3	OPV-3	3641	100%
4	Penta-1	3731	100%
5	Penta-3	3641	100%
6	PCV10-1	3731	100%
7	PCV10-3	3641	100%
8	Measles	3509	97%
9	Fully immunized	3445	95%
10	PW TT2+	3042	85%
11	NPW TT2+	1360	56%

Table16: Immunization statuses of Wensho District, SNNPR, Ethiopia, 2009E.C.

Hygiene and Environmental health services

Safe water coverage of the district was 43.3%and the main Source of water was spring. The total number of latrines in the district was 19542 with latrine coverage of 84%. Out of this 19498 latrines were utilized with utilization rate of the district 99.7%. Regular health education was given in the schools, church, health centers and health posts, on harmful traditional practices, HIV, TB and environmental sanitation.

Disease statistics

Leading causes of outpatient visits (morbidity)

The leading causes of morbidity in under five years pediatricsin the district in 2009 E.C were:Pneumonia, diarrhea with dehydration, diarrhea with no blood, diarrhea with blood (dysentery) and Infections of the skin and subcutaneous tissue the above 5 cases account 89.5%

of the total cases in pediatrics. The top ten leading causes of OPD in adults were Trauma (injury and fracture),Acute febrile illness (AFI), Helmenthiasis, Typhoid fever, Pneumonia, urinary tract infection (UTI), Diarrhea with blood (dysentery), Diarrhea with no blood, Diarrhea with dehydration and Dyspepsia which account 86.5% of all the cases. There was no data on adult and under five children mortality.

rank	Disease description	Male	Female	Total	%
1	Pneumonia	867	715	1582	46.74%
2	Diarrhea with DHN	340	309	649	19.17%
3	Diarrhea (non bloody)	265	235	500	14.77%
4	Diarrhea with blood	93	74	167	4.93%
5	Infections of the skin and subcutaneous tissue	71	60	131	3.87%
	Total of the Above Causes:	1636	1393	3029	89.48%
	Total of the Other Causes:	192	164	356	10.52%
	Total of the All Causes:	1828	1557	3385	100%

Table 17: Top 5 causes of morbidity (OPD visit) in under five (pediatrics) in Wensho district, SNNPR, Ethiopia, 2009 E.C.

Rank	**Disease description**	**Male**	**Female**	**Total**	**%**
1	Trauma (fracture, injury etc...)	513	569	1082	15.59%
2	Acute febrile illness AFI	537	323	860	12.39%
3	Helminthiasis	380	474	854	12.11%
4	Typhoid fever	363	473	836	12.31%
5	Pneumonia	265	207	472	6.8%
6	Urinary tract infection	208	263	471	6.79%
7	Diarrhea with blood (dysentery)	209	229	438	6.31%
8	Diarrhea with no blood	199	195	394	5.68%
9	Diarrhea with dehydration	161	151	312	4.5%
10	Dyspepsia	98	185	283	4.08%

	Total of the Above Cases:	2933	3069	6002	86.5%
	Total of the Other Cases:	442	495	937	13.5%
	Total of the All Cases:	3375	3564	6939	100%

Table 18: Top 10 causes of morbidity (OPD visit) in adults in Wensho district, SNNPR, Ethiopia, 2009 E.C.

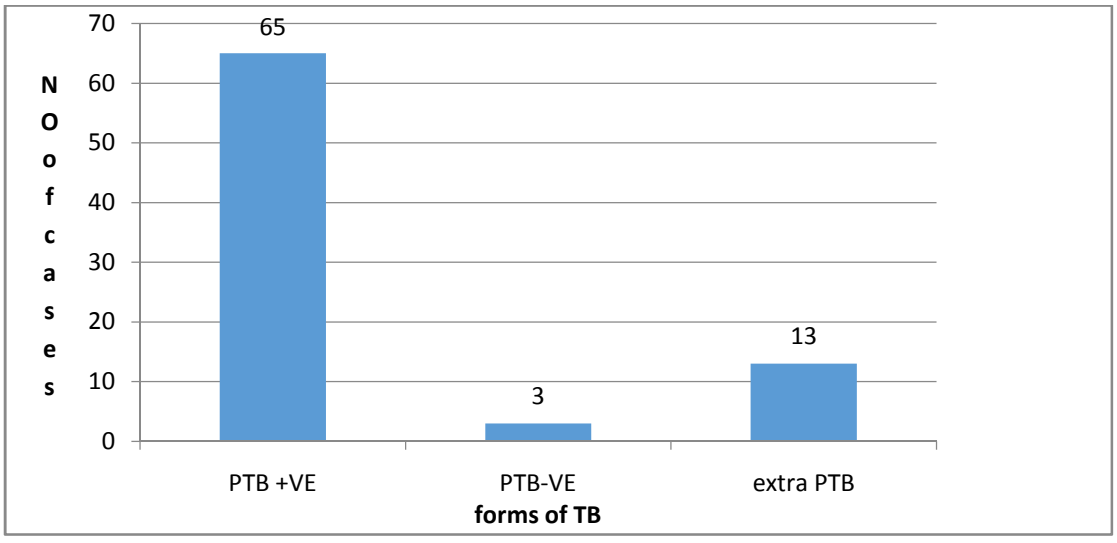
Malaria

In the district out of 17 kebeles 6 kebeles are malarious and a total of 42140 populations are supposed to be at risk of being infected by malaria. In 2009 E.C the number of malaria cases was 58 only with no death in adults and pediatrics which accounts less than 1 percent of the OPD reportedand it doesn't belong to top ten morbidity cases in the district. The District Health Office has not applied insecticide treated bed nets (ITNs) distribution and there is no IRS in 2008 and 2009 EC.

Tuberculosis (TB), and Leprosy

In the district TB detection rate was 63%and TB treatment compilation rate was 100%, were as TB treatment cure rate and TB treatment success rate both are 94% with no TB defaulter and with no death on TB treatment in 2009E.C. regarding leprosy there were no leprosy cases in the district.

Figure 16: forms of TB and case numbers wensho district SNNPR, Ethiopia 2009 E.C.



Human Immune-Deficiency Virus (HIV)/ Acquired Immune Deficiency Syndrome (AIDS)

In Wensho districta total of 7511 clients were screened for HIV antibody tests in 2009E.C out of this in VCT were 901, PIHTC were 3387, and 3223 were PMTCT tested in different health facilities. When we see the incidence there were 2 new cases in2009E.C. Total PLWHA were 25 and patients on ART were 25 from which 7 were males and 18 were females. There is no data on pre ART patients.

Nutritional Status of the District

There were 17 outpatient treatment program (OTP) sites, and 2 stabilization centers (SC) in the district in 2009E.C. and total admissions to OTP and SC in 2009 physical year were 1107 and 1745 respectively. There is no targeted supplementary feeding (TSF) program in the district.

Limitations

There was no data available on important vital health indicators like infant mortality rate, postnatal mortality rate and crude death rate.

5. DISCUSSION

The leading causes of morbidity in under five pediatricsin the district in 2009E.C was Pneumonia which accounts around 46.7% of the total cases this needs due attention and further investigations should be carried on to reduce the case. According to the HMIS data of Wensho district, trauma was the leading cause of outpatient visit in adults which accounts for 15.59% (n= 1082) of the ten top outpatient visit in 2009 EFY. This study matches with health profile study of Tullo District of Oromia region in 2013/14, were trauma is the leading cause of OPD visits, which is due to the populationskhat chewingbehavior [5]. But in Wensho district as the districts health office professionals told me, during the coffee season (since the district is high coffee producer) teenagers get money easily and they got drunk and they fought each other aggressively which increases the trauma cases. The other main factor for the trauma cases is motor cycle accident which is main means of transportation in the district and most of the drivers are teenagers with no driving license and they load up to four persons in a single motor cycle for a single trip and they drive with high speed in rural roads without even wearing protective helmets so that when a single motor accident occurs most of the time the victims are more than one person.

The contraceptive acceptance rate is 92% which is much better than the national and the regional performances in 2007E.C which is 69.9% and 72.4% respectively[4] and the immunization coverage of the children was very good as most of vaccination performances were 100 percent in 2009 E.C. This revealed that community awareness and outreach activities were done well.

According to National objective on prevention and control of Tuberculosis, efforts are invested to reduce the prevalence of TB to 156 per 100,000 populations in 2015. In this district, the prevalence of TB should be 181 per the population of the district (n=116,135). During 2009 E.C, all forms of TB were 81 that are below expected level. This exhibited that, activities were undertaken well to prevent TB cases. However, the TB detection rate was 63% which is lower than the regions performance 75.3% and the performance of the country in 2008E.C which is 67.3% [4] and the target of Ethiopia health sector development plan-IV (HSDP – IV) and the WHO recommendation that was 75% and 70% respectively [3].

Even if there were 6 malarious kebele in Wensho District, the reported confirmed malaria cases in 2009 EFY were 58 and it is not in the top ten morbidity list. This may be due to the highland

nature of the district and its neighboring districts and unfavorable climatic and environmental conditions of the district for mosquito multiplication. However, there is no coverage of IRS and there is no ITN distribution in the district which is important in malaria elimination.

The District safe water supply was 43.3% which is lower than the countries Health related MDG achievement in 2008 which is 55% [4]. Electric Power supply in the district was 22%,out of 18 kebeles only 4 kebeles have electric power supply the rest 14 kebeles have no electric power supply and none of the 18 health posts have electric power supply. Man power is the basic tool to work efficiently and effectively. But the District health office man power was not in a way that BPR structure requires because of lack of trained man power in the market, there is a gap of 11 professionals in the office.

6. CONCLUSION AND RECOMMENDATIONS

Pneumonia case accounts almost half of the pediatric OPD cases because of this further efforts should be done to reduce the case in the district and investigations should be carried out to recognize the actual cause of the disease and to apply interventions. The leading cause of morbidity in adults Outpatient visit in the district is trauma, hence the health official's in collaboration with the district police and security offices should have to work hard on prevention and control of trauma, specially the districts traffic polices should work hard on controlling of non-licensed drivers and over loading of passengers on motor cycles and all motor cycle drivers have to wear protective helmets in addition regular road traffic educations must be given in schools and community level.

The good performance gained on contraceptive acceptance rate and immunization coverage should be strengthened more and kept sustainable. Efforts should be applied to achieve the Ethiopian HSDP-IV target and WHOs recommended TB case detection rate through community mobilization and health education by health workers, HEW and women health development army. Even if malaria is not in the list of leading OPD cases, there are malarious kebeles so that ITN distribution and IRS application should be made at least for identified malarious kebeles.

Health related indicators like infant mortality rate,postnatal mortality rate and crude death rate were not recorded appropriately. Like wise man power shortage in district health office, safe water coverage of the district, electric power supply and inaccessibility of transportation to remote health facilities are issues that need due attention by the district itself, zonal health department, regional health bureau, regional government and other stake holders in general. The district sectors should keep their respective data in appropriate and easily accessible manner.

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CHAPTER V -SCIENTIFIC MANUSCRIPT FOR PEER REVIEWED JOURNALS

Surveillance data analysis of Human and Animal Anthrax in South Nations Nationalities and peoples region: A retrospective record review 2013-2017.

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ABSTRACT

Anthrax is an acute zoonotic disease caused by gram-positive, non-motile bacteria known as *bacillus anthracis.* SNNPR is one of the anthrax endemic regions in Ethiopia. So this analysis was doneto assess the magnitude and trend of anthrax in the region and to propose recommendations. A cross sectional descriptive study was carried out. The trend and distributions of anthrax cases was analyzed by place and time and presented using graphs and tables.In the last five years (2013-2017) a total of 438 human anthrax cases and 47 deaths and 1002 animal cases and 567deaths were documented in SNNPR. The anthrax cases annual prevalence was 0.5/100,000 population per year for human cases and 1.01/100,000 population per year for animal cases. Most of the human cases were reported from Bena Tsemay district of South Omo zone 222(50.6%) and konso district of Segen peoples zone 67(15.8%). And for animal anthrax cases Gewata district of Kefa zone reported 199(19.8%) of cases and Bena Tsemay district of South Omo zone148 (14.7%) cases.

Anthrax remains to be a major public health problem in the region. As per the analysis, increasing number of cases and fatalities were reported especially from the pastoralist and semi pastoralist areas like South Omo, Segen and Keffa zones of the region. High number of cases was seen in dry seasons of the years and increased number of human cases was observed in pastoralist districts due to improper handling of dead animals.

Key Word: Anthrax, Human, Animal, SNNPR, Ethiopia.

1. INTRODUCTION

Anthrax is an acute zoonotic disease caused by gram-positive, non-motile bacteria known as *bacillus anthracis*. The name of the bacterium is derived from “anthrakis”, the Greek word for coal, because anthrax in humans causes black, coal-like lesions on the skin at the site of inoculation [1].

It is primarily a disease of Herbivorous and wild mammals which are commonly infected by Anthrax through ingestion or inhalation of spores while grazing. Herbivores usually contract anthrax through ingestion and carnivores living in the same environment may become infected by consuming infected animals [2].. There are three forms of anthrax coetaneous, gastrointestinal and pulmonary (inhalational). The incubation period in humans is usually 1 to 7 days, but varies with the form of the disease [3].

Animal Anthrax outbreaks have been recorded in nearly 200 countries by The World Anthrax Data Site, a World Health Organization Collaborating Center for Remote Sensing and Geographic Information Systems for Public Health [4]. The countries with hyper endemic/epidemic status are frequently in Africa, like Zimbabwe, from 1978-1980; where an epidemic infected nearly 10,000 humans and took 151 lives although the status of Egypt is “Probably free”. Examples of regions with unknown anthrax status are the polar extremes, the Arctic and the Antarctic [5, 6].

Animal anthrax is an endemic disease in Ethiopia which occurs in May and June every year (anthrax season) in several farming localities of the country, although suspected cases of livestock anthrax are reported from several districts, few of those are officially confirmed [8]. The common use of traditional medicine for anthrax in Ethiopia [8-10] indicates that the disease is well recognized by rural communities but little is known about its prevalence, epidemiology and public health significance.

According to Ministry of Health surveillance data, in the Ethiopian fiscal year 2003, a total of 1,096 suspected human anthrax cases and 16 deaths (with a CFR of 1.5%) were reported from four regions (Tigray, Amhara, Oromia, and SNNPR) out of this the second highest number of cases (340) and the highest number of deaths (9) were reported in SNNPR (56% of the total deaths), [9-11]. This shows that the surveillance system is developing recently and anthrax is one

of weekly reportable disease in public health emergency management unit in health bureaus, but surveillance data of anthrax is not analyzed and communicated to concerned bodies regularly.

So, the main propose of this analysis was to assess the five (2013-2017) years anthrax trend in southern nations nationalities and peoples region in order to get valuable inputs, To identify areas of endemicity, to assess trend and seasonality of anthrax in the region and figure out the completeness of the reporting system to engage in corrective actions and recommend evidence based interventions for the future.

2. MATERIALS AND METHODS

Study area and period

The study was conducted in Southern Nations Nationalities and Peoples' Region of Ethiopia. The regional surveillance data were collected from 14 zones, 4 special districts and 1 city administration from a total of 3880 health posts, 780 health centers and 41 hospitals. Public health emergency has its own structure from the Regional level to the health post. Hence, it is a line of reporting from the lower level to the upper. The study was conducted in SNNPR regional health bureau from March to April 2018.

Source of data

The data was obtained from Southern nations Nationalities and Peoples Region health bureau public health emergency management weekly surveillance data for human anthrax and for animal anthrax, because of lack of data in the regional bureau of livestock and fisheries the data was abstracted from the Ministry of livestock and fisheries.

Study design

A cross sectional descriptive method of study was carried out. The trend and distributions of anthrax cases from 2013 to 2017 was analyzed by place and time and presented using graphs and table.

Sample size

Regarding the sampling all anthrax data reported between 2013 and 2017 in regional PHEM and from the Ministry of livestock and fisheries were included in this analysis and descriptive statistical analysis of data was made using Microsoft Excel.

Ethical clearance

Permission to carry out the study was obtained from SNNP regional health bureau PHEM, Federal ministry of livestock and fishery and Regional bureau of livestock and fishery for both human and animal anthrax.

3. RESULTS

In the last five years (2013-2017) a total of 438 human anthrax cases and 3 deaths and from (2013 to half year of 2017) 1002 animal anthrax cases and 567deaths were documented in SNNPR. Human anthrax Cases and deaths were reported in weekly summary report of the regional PHEM, were as the animal cases and deaths were reported in monthly basis to regional and federal livestock and fishery bureaus and both are not accomplished with line list and the animal anthrax data for 2017 is a half year data. Highest number of cases was reported in 2015 (215 cases) for human cases and in 2017 (299 cases) for animal anthrax cases. The anthrax cases annual prevalence was 0.5/100,000 population per year for human cases and 1.01/100,000 population per year for animal cases.

year	Human anthrax cases	Animal anthrax cases	anthrax load per 100,000 population	Animal anthrax load per 100,000 population
2013	85	95	0.46/100,000	0.48/100,000
2014	75	179	0.4/100,000	0.9/100,000
2015	215	177	1.2/100,000	0.9/100,000
2016	0	252	0	1.3/100,000
2017	63	299	0.34/100,000	1.5/100,000

Table 19: human and animal anthrax cases load per year and per 100,000 populations, SNNPR.

Human and animal anthrax cases by month

When we see the cases by month, the highest human cases were recorded in March and February 147 and 137 cases respectively which account 64.8% of the total cases. A total of 311 (71%) cases were reported from January to May and 127(29%) cases from June to December. Regarding animal anthrax, 251(37.6%) case was reported on January and 130(13%) on

November, a total of 434(43%) cases from April to September and 568(57%) cases from October to March.

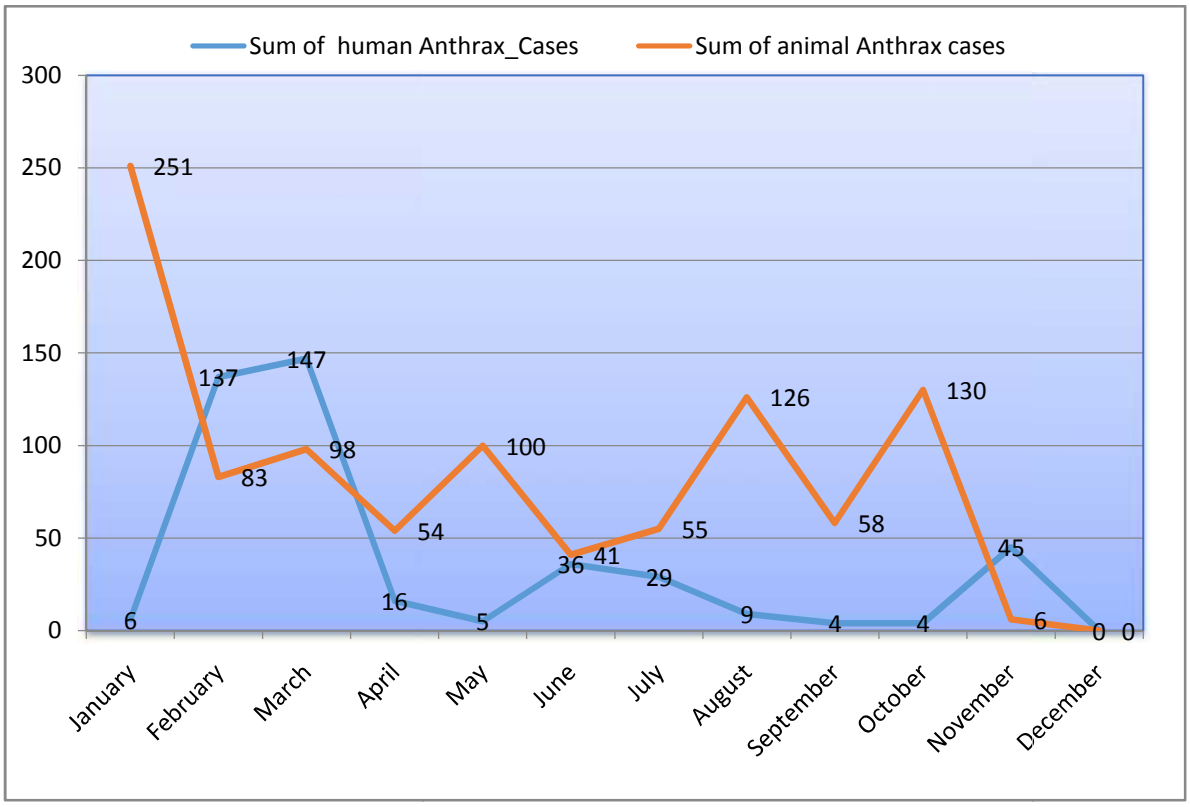

Figure 17: Human and Animal anthrax cases by month from 2013-2017, SNNPR, 2018

Human and animal anthrax cases, deaths, CFR and human to animal anthrax case ratio by zones.

All the human anthrax cases were reported from 5 zones and the majority of the cases were from South Omo zone 260(59.3%), followed by Segen peoples zone 68(15.5%). Out of 19 zones and special weredas in the region 14 zones were reported the animal anthrax case and the majority of cases were reported from Keffa zone 232(23%), South Omo zone 163(16.2%), and Gamo Gofa zone 152(15.2%). The Human: Animal anthrax case ratio was seen higher in Segen and south Omo zone which is 2:1 and 1.6:1 respectively and lower in Welaita(0:144) and Gamo Gofa (0:152) zones.

Zones/special districts	Human Anthrax Cases	human Anthrax Deaths	CFR (%)	Animal Anthrax Cases	Animal Anthrax Deaths	CFR (%)	**Human/Animal case ratio**
Basketo	0	0	0	0	0	0	0
Bench Maji	32	2	6.3	44	37	84.1	1:1.4
Dawuro	0	0	0	5	0	0	0:5
Gamo Gofa	0	0	0	152	62	40.8	0:152
Gedeo	0	0	0	42	14	33.3	0:42
Gurage	45	0	0	58	34	58.6	1:1.3
Hadiya	0	0	0	4	3	75	0:4
Halaba	0	0	0	15	5	33.3	0:15
Hawassa Town	0	0	0	0	0	0	0
Kefa	33	0	0	232	200	86.2	1:7
Kembata Tembaro	0	0	0	59	16	27.1	0:59
Konta	0	0	0	0	0	0	0
Segen	68	0	0	35	18	51.4	2:1
Sheka	0	0	0	0	0	0	0
Sidama	0	0	0	44	31	70.4	0:44
Silte	0	0	0	35	23	65.7	0:35
South Omo	260	1	0.4	163	61	37.4	1.6:1
Wolayita	0	0	0	114	63	55.3	0:144
Yem	0	0	0	0	0	0	0

Table 20: Human and animal anthrax cases, deaths, CFR and human to animal anthrax case ratio by zones.

All human anthrax cases by district and year

As shown in the table below, all the human anthrax cases were reported from 5 zones and 10 districts. Most of the human anthrax cases were reported from Bena Tsemay district of South Omo zone 222(50.6%) and konso district of Segen peoples zone 67(15.8%).

Zone	District	2013	2014	2015	2016	2017	Grand Total
South Omo	Bena Tsemay		1	163		58	222
Segen	Konso	43	6	18			67
Gurage	Abeshge		42	1	2		45
Kefa	Decha	33					33
South Omo	Hamer	1	13	2		5	21
South Omo	Dassenech			17			17
Bench Maji	Menit Shaha	6	10				16
Bench Maji	South Bench			15			15
Bench Maji	She Bench	1					1
Segen	Derashe	1					1
	Grand Total	85	72	216	2	63	438

Table 21: All human anthrax cases by district and year

Top 10 districts with highest animal anthrax case from.

From 2013 up to half year of 2017 a total of 787(78.5%) of animal anthrax cases were reported from the top 10 districts, out of this Gewata district of Kefa zone reported 199(19.8%) of the cases and Bena Tsemay district of South Omo zone was second by 148(14.7%) cases.

Zone	Wereda	2013	2014	2015	2016	2017	Total
Kefa	Gewata				2	197	199
S.Omo	Bena Tsemay			130	12	6	148
Gamo Gofa	Boreda					96	96

Welaita	Offa	35	37				72
Kembata Timbaro	Kacha-Bira				59		59
Halaba	Halaba Sp. Wereda			31	15		46
Bench Maji	Semen-Bench	10	34				44
Gedeo	Wenago				42		42
Gamo Gofa	Geze Gofa				41		41
Guragie	Abeshegie				40		40
	Total	45	71	161	211	299	787

Table 22: Top 10 districts by animal anthrax case from 2013-2017 SNNPR, Ethiopia 2018.

4. DISCUSSION

In the last five years (2013-2017) a total of 438 human anthrax cases and 47 deaths and 1002 animal anthrax cases and 567deaths were documented in SNNPR. Prevalence of Human and Animal anthrax between 2013 and 2017 in the region was seen 0.5/100,000 population per year for human anthrax cases which is lower compared to the regions prevalence from 2009-2013 (1.3/100000) [12]. And in this study the number of human cases and animal cases reported was decreased by 38.5% and 24.8% respectively than the previous study [12]. This might be due to increased awareness of the community about the transmission of the disease, improved health education in rural and pastoralist areas and increased vaccination coverage of animals against anthrax.

The highest human cases were recorded in March and February 147 and 137 cases respectively which account 64.8% of the total cases and a total of 311 (71%) animal cases were reported from January to May. This is dry season, during this time the grass is short and animals are forced to graze very close to the ground. This increases chances of animals picking up anthrax spores in areas whose soils and pastures are contaminated with the spores [7]. Therefore, case of anthrax in animals is very common during this time increasing risk of human anthrax exposure.

Most of the human anthrax cases were reported from Bena Tsemay district of South Omo zone 222(50.6%) and konso district of Segen peoples zone 67(15.8%) were as Gewata district of Kefa zone reported 199(19.8%) of the animal cases and Bena Tsemay district of South Omo zone was second by 148(14.7%) animal cases. As we see from the data more human cases were seen in pastoralist Benatsemay and Konso districts but the leading animal anthrax case was reported from kefa zone gewata district. The increased human cases in Benatsemay and Konso district are due to the cultural makeup of the population. The population in these two adjacent districts used to undress the skin of dead animals in belief of 'taking at least the skin of the animal is the payment for the dead animal'. This leads to increased contact with infected dead animal which increases human cases.

The animal anthrax cases for 2017 was half year data and most of the suspected human cases and deaths were reported in weekly summary report, not accomplished with line list. This reporting system lack detail information that help to analyzed the case by different variables. Therefore variables like age, sex, urban and rural case distributions were not analyzed from the weekly summary report. In addition to these the form of anthrax, like coetaneous, inhalation and ingestion were not mentioned. This affects the completeness of the analysis.

Anthrax remains to be a major public health problem in the region. As per the analysis, increasing number of cases and fatalities for both animal and human anthrax were reported especially from the pastoralist and semi pastoralist areas like South Omo, Segen and Keffa zones of the region. Data quality and completeness plays important role to uncover the disease status of a country or a given region and to apply proper control and prevention strategies, so that the regional bureau of livestock and fishery have to have a proper recorded data of years for list A and zoonotic diseases. The regional bureau of health and federal ministry of health both have to work on human anthrax case and death to be reported with daily epidemic reporting format or a line list and with case-based immediately and also the case should be reported in specific form of the disease.

I recommend strong routine cross-notification between the veterinary and human health surveillance systems should be part of any zoonotic disease prevention and control programs, and close collaboration between the two health sectors is particularly important during epidemiological investigations. Health educations through community leaders and health

professionals should be strengthen in pastoralist areas to avoid contact with dead animals so that to decrease the risk of human anthrax.

ACKNOWLEDGMENT

First of all, I would like to thank the Almighty God for what he has done for me; second I would like to appreciate my Advisors Dr Fufa Abuna and Dr Adamu Adisie for their continuous support, guidance and inputs in my outputs.

Also, I would like to thank Southern Nations Nationalities and Peoples Region Health Bureau and livestock and fisheries bureau and also the federal livestock and fisheries ministry for their collaboration in providing data.

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CHAPTER VI –ABSTRACTS FOR SCIENTIFIC PRESENTATION

6.1 Surveillance data analysis of Human and Animal Anthrax in South Nations Nationalities and peoples region: A retrospective record review 2013-2017

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Name of FETP: Ethiopian FETP

Title: Surveillance data analysis of Human and Animal Anthrax in South Nations Nationalities and peoples region: A retrospective record review 2013-2017

ABSTRACT

Anthrax is an acute zoonotic disease caused by gram-positive, non-motile bacteria known as *bacillus anthracis.* SNNPR is one of the anthrax endemic regions in Ethiopia. So this analysis was doneto assess the magnitude and trend of anthrax in the region and to propose recommendations. A cross sectional descriptive study was carried out. The trend and distributions of anthrax cases was analyzed by place and time and presented using graphs and tables.In the last five years (2013-2017) a total of 438 human anthrax cases and 3 deaths and 1002 animal cases and 567deaths were documented in SNNPR. The anthrax cases annual prevalence was 0.5/100,000 population per year for human cases and 1.01/100,000 population per year for animal cases. Most of the human cases were reported from Bena Tsemay district of South Omo zone 222(50.6%) and konso district of Segen peoples zone 67(15.8%). And for animal anthrax cases Gewata district of Kefa zone reported 199(19.8%) of cases and Bena Tsemay district of South Omo zone148 (14.7%) cases.

Anthrax remains to be a major public health problem in the region. As per the analysis, increasing number of cases and fatalities were reported especially from the pastoralist and semi pastoralist areas like South Omo, Segen and Keffa zones of the region. High number of cases was seen in dry seasons of the years and increased number of human cases was observed in pastoralist districts due to improper handling of dead animals.

Key Word: Anthrax, Human, Animal, SNNPR, Ethiopia.

6.2 Investigation of scabies outbreak in Humbo district, SNNPR, Ethiopia, 2011 EFY

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Name of FETP: Ethiopian FETP
Title: Investigation of scabies outbreak in Humbo district, SNNPR, Ethiopia, 2011 EFY.

ABSTRACT

Background: - Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. hominis. Scabies is an important disease of children, but it occurs in both sexes, at all ages, in all ethnic groups and at all socioeconomic levels and personal hygiene is an important preventive measure and access to adequate water supply is important in control. A suspected scabies outbreak occurred in Humbo district of Welayta zone SNNPR Ethiopia. The aim of this study is to investigate the outbreak of scabies and identify the risk factors for the occurrence of the outbreak in order to provide appropriate control and prevention measures of the disease in Humbo district of Welayta zone SNNPR.

Methods: -Descriptive cross sectionalstudy design was used and Data was entered and analyzed using Epi Info 7 and Microsoft excel.

Results: - A total of 1733 suspected scabies cases from September to November 2011were reported from 22 kebeles of Humbo district. Out of 1733 cases, 1043 (60.1%) were males and 691 (39.9%) were females. Children's of 5-14 years of age groups were the most affected age group (n= 731) with an attack rate of 26.5/1000 population followed by adults of age >15 year with an attack rate of (n=966) 22/1000 population. The overall attack rate of 22 affected kebeles was 20.2 cases/1,000 populations, with no scabies related death (CFR=0).

Conclusion: -A total of 1733 suspected scabies cases from September to November 2011were reported from 22 kebeles of Humbo district in SNNPR with over all attack rate of 20.2/1000 population**.**Mass treatment with perimetrin and health education was conducted. We recommend enhancing, strong ongoing active case surveillance of scabies; health education on treatment and prevention of scabies to be enhanced and continued in the community by health workers to provide treatment and health education would be very beneficial.

Key words: Scabies, outbreak, attack rate, Humbo, SNNPR, Ethiopia**.**

CHAPTER VII –NARRATIVE SUMMARY OF DISASTER SITUATION VISITED

Meher Season Emergency Health and Nutrition needs assessment

Conducted in GURAGIE and SILTE zones SNNPR, Ethiopia, December 2018

1. INTRODUCTION

Ethiopia has been conducting human health and nutrition emergency needs assessment twice a Year during Meher and Belg seasons. The Meher assessment is always conducted following the main harvesting season to see the level of production and map the different hazards occurred and to predict the potential economic, health and social threats. During the assessment possible human health and nutrition risks were expected to be identified and numbers of beneficiaries were estimated. Finally based on the results of the assessment humanitarian document was prepared and distributed to all concerned partners to fill the gaps identified to stops and minimize public health consequences.

This assessment was led by Disaster Risk Management and Food Security Sector in collaboration with other governmental sectors like Ministry of Health, Ministry of Water and Energy, Ministry of Education, Ministry of agriculture and livestock, National Metrology Agency and respective regional bureaus and non-governmental organizations involved were WHO, UNICEF, World Vision, FAO, World food program, Goal international, Save the children and others.

Southern Nations, Nationalities and Peoples Regional State is one of the 9 Regions in the Federal republic of Ethiopia with estimated total population of 18,951,895 residing in about 18,000 sq. km, and has 56 ethnic groups. The assessment was conducted in 10 Zones and 1 Special District, with 6 different assessment teams. From each Zone two or three districts were selected based on emergency health and nutrition problems in consultations with the RHB, zonal HB and Disaster Risk Management and Food Security Sector. This health assessment as part of Meher needs assessment was conducted in two zones (Guragie and Silte) and six hotspot districts from these two zones were selected and assessed. The assessment was conducted from November 21 to December 5, 2018 in these hot spot districts. The assessment gave particular emphasis on the emergency health and nutrition situation and needs.

The purpose of this assessment is to identify areas where emergency health and nutrition assistance is needed for the upcoming six months (January to June 2011 EC) and to determine the gap in the capacity of the health system in addressing anticipated risks so as to develop response plan.

2. OBJECTIVES

- To assess the extent, types, magnitude, severity and likelihood of different risks in selected districts of Guragie and Silte zones.
- To identify areas where emergency assistance in health and nutrition might be needed.
- To describe existing resources and the capacity to cope with circumstances.
- To describe the capacity of the existing health services to address the health and nutrition emergencies likely to occur.

3. METHODOLOGY

Study design and Study Area

A cross sectional study design was used to assess and identify human health and nutritionEmergency needs in the upcoming six months.The assessment was conducted in Gurage and Silti Zones of SNNP region. From each zones 3 districts were selected and visited based on their risk trend.

Assessment Team and Assessment Tools

Six experts from Regional DRMFSS, ministry of water and energy, Regional HB, Ministry of education, Regional livestock and fisheries bureau and UNICEF were participated in the assessment. One day orientation was given for all assessment team at Regional DRMFSS before deployed to zones.

Two different structured questioners were used to collect health and nutrition related data at district and zonal levels. The questioners addresses socio-demographic profile, health profile, status of epidemic prevention and control, risk factors, availability of emergency drug at zonal and district levels and it goes through asking nutrition status and situations related to flooding.

Source of Data

Secondary data were collected through discussion and interview from Zonal Health department and district health offices. Heads of zonal and district health offices, PHEM officers and other expertise were interviewed in the data collection. Briefing by different sectors of the zones were made to the team members before departing to the selected Districts, and also debriefing by the assessment team was done for respective government officials at last and discussions were under gone about the findings of the assessment.

4. ASSESSMENT FINDINGS

4.1 GURAGIE ZONE

Zonal level findings

Socio demography

Guragie zone has a total of 1,727,522 populations of which 871,189 were females and the number of below five years children and women of reproductive age (15-49yrs) were 269,666 and 402,513 respectively. There are 32000 IDPs in the zone displaced from Meskan and Mareko districts due to conflicts. Regarding health facilities there are 71 health centers out of which 49 health centers have both water and latrine and 412 health posts of which 238 have improved latrines and water, there are 679 health extension workers in the zone.

Health profile

Coordination and management

There are 2 PHEM officers in zonal level, 17 in district level and 6 in hospitals there are also 71 PHEM focal persons in all 71 HCs and all of them regularly send weekly PHEM report in regular basis to respective authorities. There is a multi-sectorial Epidemic Prevention and Control Committee at the zone level. The committee consists of all expected governmental organizations and other relevant sectors and headed by zone administrator having head of health department as secretary. The problem was the committees have no regular meeting; they meet in quarterly basis while it should be in monthly basis. There is public health emergency preparedness plan at zonal level and they allocated 500,000ETB for PHEM emergency response. There is 1 PHEM officer in zonal level and 15 officers in District level out of which 2 are females and all the officers took basic level PHEM and RRT training.

Anticipated epidemic

Scabies and measles are anticipated risks in the zone due to presence of IDP in Mareko and Meskan districts and they distributed perimetrin for scabies management to these districts.

Disease outbreaks

During the last six month May -October, 2018 outbreaks were not reported from the districts in the zone except Mareko and Meskan districts who reported scabies cases and it's still an ongoing outbreak but due to security issues and presence of IDPs in the areas they don't have the exact number of cases and time of onset of the outbreak.

Drugs and medical supplies stocked out in the last 3 months

In Guragie Zone there are no sufficient emergency drugs and medical supplies used to treat and diagnose Malaria, Measles, Meningitis and AWD at least for 3 month at zonal level.

Risk factors

In Guragie zone there are malaria risk factors like, malaria breeding sites, potentially interrupting rivers and unprotected irrigations. The IRS in 2011EFY was 46619 unit structures and they achieved their target 100%. The zone took some prevention and control measures like source reduction, IRS and ITN distribution together with health education. There was AWD epidemic from July 2008E.C to September 2009E.C with 24 cases and 2 deaths and it is no more ongoing. The latrine coverage of the zone was 98.6% with a total of 329,590 latrines and 72% safe water coverage. There is no meningitis outbreak in the last 3 years andthere is no ongoing measles outbreak in the zone.

In general the zonal health department believes that the presence of IDPs in the zone may aggravate epidemics of measles, AWD and scabies and shortage of drugs, transportation problems and shortage of trained man power are challenges during emergency response.

Nutrition

The year 2018 meher rain was erratic, early onset and early cease and has mil-distribution compared to the previous belg season and seasons of last year in Gurage zone. Accordingly, this year's meher crops harvest is estimated to have low productivity and might cause house hold food gap. However, the household food security will not be affected due to the presence of perennial crops.The trend of Severe Acute Malnutrition (SAM) cases was stable in the zone and adequate therapeutic supplies of (F-100, F-75 and RUTF) are available for one month.

Flooding

Regarding flooding there is no flooding history in the zone in the past six months in all districts.

District level findings

In Guragie zone we have planned to see 3 districts namely Sodo, Meskan and Mareko but due to presences of conflict between Meskan and Mareko districts and several security problems we can't go to these districts so, the zonal department of health gave us Abeshigie and Cheha districts in replacement and we have assessed them and the findings are given below.

Socio Demography

Abeshigie, Sodo and Cheha Districts of Guragie zone have total populations of 81119, 192096 and 155107 respectively, of which 41370, 97968 and 79105 are female in respective Districts. From the total population 6602, 26778 and 24212 were children under five years in Abeshigie, Sodo and Cheha Districts respectively. In the three districts there were no special population such as pastoralist, refugees, internal displacement population and migrant workers. There are 4 HCs of which 1 HC without water, 26 HPs all without water and 56 health extension workers in Abeshigie District, 8 HCs all have water and latrine 54 HPs all without water and 116 health extension workers in Sodo district and 7 HCs of which 1 HC without water, 40 HPs of which 34 without water and 67 health extension workers in Cheha district.

Health profile

Coordination and management system

Multi-sectorial PHEM coordination forum is mandatory for rapid and timely response to public health emergencies. All visited districts have a PHEM coordination forum involving Governmental Organizations and other relevant stakeholders with distinguishable responsibilities and duties however; none of them has regular meetings. All of the visited districts have public health emergency management officers and focal persons in HC level and they regularly report weekly PHEM report in regular basis. All the districts have a public health emergency preparedness and response plans and they allocated an emergency response fund of 70000 in Abeshgie, 25000 in Chaha and 35000 in Sodo district.

Morbidity

The top five causes of morbidity of under five children and above five in the visited districts differ somewhat as we can see from the table blow.

District	Top 5 morbidity in under 5	Top5 morbidity above 5
1. ABESHGIE	1. Diarrhea	1. Pneumonia
	2. Pneumonia	2. Dyspepsia
	3. AFI	3. Diarrhea
	4. Scabies	4. AFI
	5. STI (accident)	5. Malaria
2. SODDO	1. All respiratory diseases	1. All respiratory diseases
	2. Non bloody diarrhea	2. Non bloody diarrhea
	3. Pneumonia	3. Pneumonia
	4. Acute febrile illness	4. Trauma
	5. Skin and subcutaneous infe.	5. epidemic typhus
3. CHEHA	1.Diarrhea	1. All respiratory disease
	2. All respiratory disease	2. Unspecified disease of eye
	3. Pneumonia	3. UTI
	4. AFI	4. Dyspepsia
	5. skin infection	5. Pneumonia

Table 23: top 5 cases of morbidity in 3 visited districts of Guragie zone, SNNPR, Ethiopia, 2018.

Disease trends in the last six months

In Abeshgie and Sodo districts there is no outbreak occurred during the last six months but in Cheha district Scabies outbreak occurred since September 28 and 48 cases were found with no death and it is no more on going, there is no other ongoing outbreak.

Regarding AWD, MENINGITIES and MEASELS there is no outbreak in the last six months.

Risk factors

Malaria: in all visited districts there are risk factors for malaria like unprotected irrigations, malaria breeding sites and interrupting rivers. In Cheha district there are 30 malarias kebeles with 107000 total populations at risk, in Soddo district 37 malarious kebels with 120766 population at risk and 29 malarious kebeles with 81119 populations at risk in Abeshigie district. Sodo and Cheha districts have 100% ITN distribution and 90% ITN distribution was seen in

Abeshgie. All the 3 districts undergo prevention and control activities like source reduction, health educa tion and IRS.

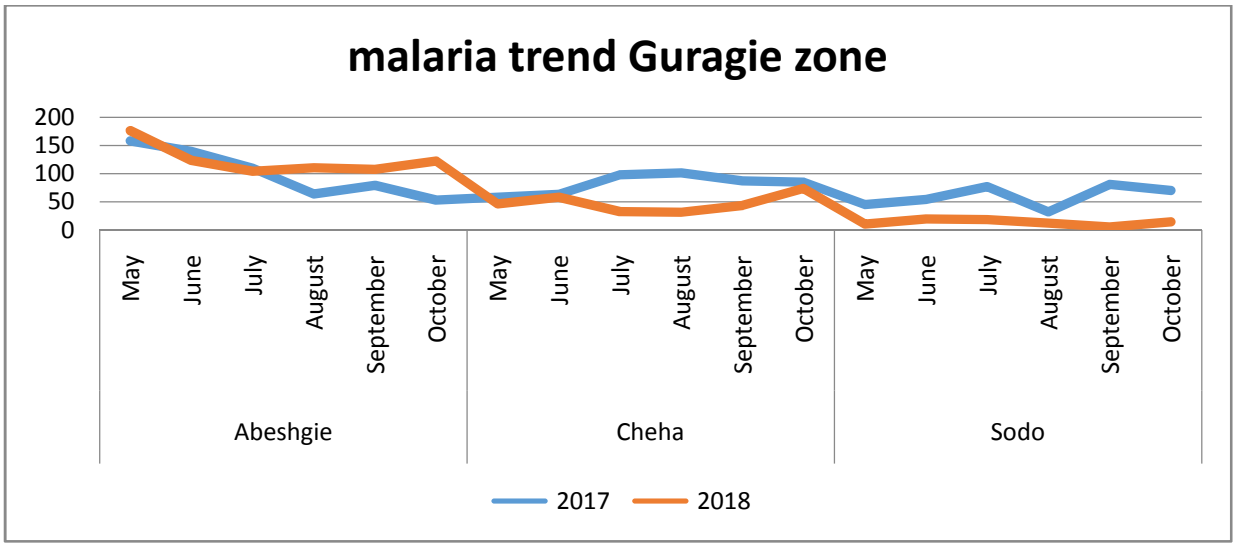
There is no expectation of Meningitis outbreak in the coming months and did not occurred during the last three years in the visited three districts. AWD outbreak is anticipated due to the inadequate safe water supply and presence of IDP in neighboring districts of Marako and Meskan. Currently there is no ongoing measles outbreak in all observed districts. Sodo district said that there is fear of imported measles from neighboring Oromia regional state districts. The vaccination coverage in the first quarter of 2011 EC against measles antigen was 100% in the visited districts. All the districts claimed that there is problem of transportation, shortage of budget, lack of skilled man power and logistic as challenges during epidemic response.

The trend of malaria in the past six months and comparison with the last years the same season was given below on the table.

Months	**Abeshgie district**		**Sodo district**		**Cheha district**	
	2017	**2018**	**2017**	**2018**	**2017**	**2018**
May	158	176	45	10	58	46
June	139	123	54	19	63	58
July	109	104	77	18	98	32
August	64	110	32	12	101	31
September	79	107	81	5	87	43
October	53	122	70	14	85	73

Table 24: malaria cases in 3 visited districts of Guragie zone, SNNPR Ethiopia, 2018.

Figure 18: trend of malaria in 3 visited districts of Guragie zone, SNNPR Ethiopia, 2018.



As we can see from the above table and figure in Abeshgie district the trend of malaria shows slight increase when compared to the last years the same season this may be due to incomplete distribution of ITN in the district which is 90% whereas Sodo and Cheha districts have 100% ITN coverage as stated above.

Preparedness

When we see the availability of emergency drugs and supplies for the next 1 month

- CHEHA District has no consumables like gloves, syringes and CTC kits for AWD management, TTC ointments for measles and RDT kit for meningitis.
- SODO district has no doxycycline, syringe, gloves and CTC kits for AWD management, amoxicillin suspension for measles and RDT kit for meningitis is also not there.
- ABESHGIE district claimed that they have no coartem for malaria, RDT for malaria and meningitis and CTC kit for AWD management.

All the districts have allocated some budget for emergency rapid response Sodo district 35000ETB, Abeshgie district 70000ETB and Cheha district allocated 25000ETB. But we recommend strict follow up and fulfilling the gaps from zonal and regional health departments since the budget is low as seen.

Nutrition and screening

SAM cases reported in the year 2018 are lower than the cases reported in the previous year same period in the zone. Similarly, SAM cases reported from May – October 2018 is lower compared

to same months in 2017 in both Sodo and Cheha districts of Gurage Zone. Approximately null TFP case admission has been observed in Abeshege district in the last two years. In all visited districts all Health Posts provide OTP service and all Health Center also provide SC services.

In the three visited districts nutritional screening has been conducting routinely on monthly bases (CHD). The screening result of the 3 visited districts indicate that, Abeshege and Cheha districts are performing good but Sodo district screening coverage is 75% which is below from the target. Similar to Sodo district, the Zonal average screening coverage is also below the expected. This low coverage in turn contributes to increasing case load in OTPs and SCs due to late identification of malnutrition cases and late referral. The Zonal low screening performance may also results in poor identification and late containment of malnutrition cases as an intervention.

Gaps/Challenge:

- Low Budget allocation for PHEM at District level
- Multi-sectorial Epidemic Prevention and Control Committee have no regular meeting.
- None of the District has CTC kits and meningitis laboratory supplies (RDT, LP).
- Poor data management
- Lack of Logistics/Transportation

Recommendations

- Multi sectorial PHEM coordination forum should be functional on regular bases irrespective of the epidemics occurrence.
- Adequate Emergency drug and medical supplies should be available at zonal level and district level.
- The coverage of safe water should be improved in all visited areas and heath institutions.
- Meningitis drugs and laboratory supplies and CTC kits are required in all visited Districts for AWD management.
- Zonal screening performance should be increased to avoid late identification of malnutrition cases and late referral.
- There should be good data management practices in all the districts.

4.2. SILTE ZONE

Zonal level Findings

Socio demography

Silte zone has a total of 1,033,954 populations of which 527317 were females and the number of below five year children is 161400 and women of reproductive age (15-49yrs) were 240912. There are 34 health centers out of which 10 health centers have both water and improved latrine and 196 health posts of which 30(15%) have improved latrines and water there are 196 health extension workers in the zone.

Health profile

Coordination and management

There are 2 PHEM officers in zonal level, 9 PHEM officers in all 9 districts and 34 PHEM focal persons in all 34 HCs and all of them regularly send weekly PHEM report in regular basis to respective authorities. There is Multi-sectorial Epidemic Prevention and Control Committee at zonal level. The committee consists of all expected governmental organizations and other relevant sectors. The problem was the committees have no regular meeting; they meet in quarterly basis and whenever there is emergency. There is public health emergency preparedness plan at zonal level but there is no budget for PHEM emergency response. There is 1 staff in zonal level which took basic level PHEM and RRT training and 2 officers in District level.

Anticipated epidemic

Scabies, AWD, meningitis and measles are expected in all districts and malnutrition is anticipated risk in 5 districts due to critical agricultural productivity decrease.

Disease outbreaks

During the last six months May to October 2018, scabies outbreak occurred with total cases of 2862 and zero deaths and it is still ongoing outbreak and six suspected meningitis cases were reported in the past six months in the zone.

Drugs and medical supplies stocked out in the last 3 months

In Silte Zone there are no sufficient emergency drugs and medical supplies used to treat and diagnose Malaria, Measles, Meningitis and AWD at least for 3 month.

Risk factors

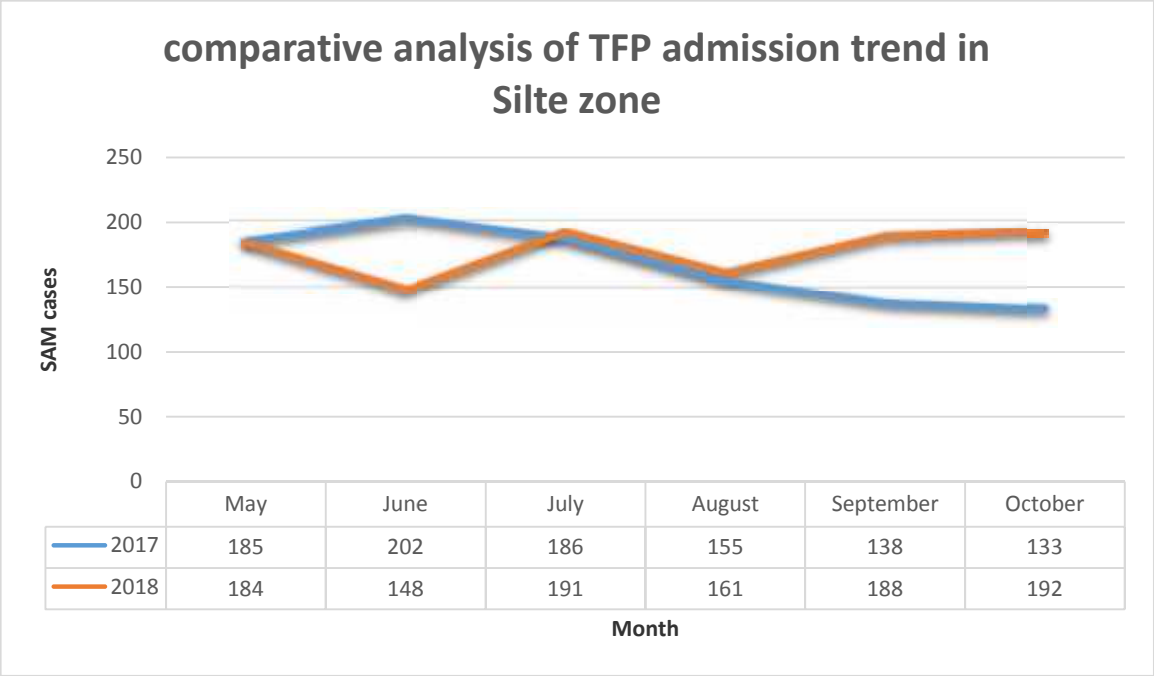
In Silte zone there are risk factors for malaria like malaria breeding sites, potentially interrupting rivers and unprotected irrigations. There are 130 malarious kebeles with 711998 total populations at risk. The LLINs distribution was 227300 (58%) and coverage of IRS in 2011EFY was 39881 unit structures in 23 kebeles and they achieved their target 100%. The zone took some prevention and control measures like source reduction, IRS and ITN distribution together with health education. There was AWD epidemic from February 2009E.C to March 2009E.C and it is no more ongoing. The latrine coverage of the zone was 95% with a total of 201392 latrines and 52.67% safe water coverage. There are 6 suspected meningitis cases in Silti district in the past 6 months andthere is no ongoing measles outbreak in the zone.

The zonal health department believes that due to unseasonal rain and presence of plant disease may aggravate malnutrition and also poor water coverage and presence of flooding may lead to AWD, scabies and malaria epidemics. Shortage of drugs, transportation problems and turnover of trained man power are challenges during emergency response.

Nutrition emergency

The zonal government believes that, out of the total 8 districts in the zone 5 districts have the fear of malnutrition in the coming six months. The pattern of 2018 meher rain was good only for short period of time in Silte Zone then it was changed to excessive rain fall in some districts and critical shortage in the other districts of the Zone. In addition to the variability in its pattern and amount, it was ceased early before flowering and fruiting stages of meher crops. Due to this situation agricultural production is decreased by 40% while compared to the previous season's production. To this effect, the community residing in affected areas might experience household food gap and this in turn may contribute to TFP admissions by exposing the vulnerable children to acute malnutrition. With this fact, the SAM admission in the Zone is increasing both in OTPs and SC when compared with last years the same season. Because of this a lot has to be done in consorted manner to minimize malnutrition case in the upcoming months. The figure below shows comparative analysis of May – October 2018 TFP admission trend in Silte zone.

Figure 19: comparative analysis of TFP admission trend in Silte zone, SNNPR, Ethiopia, 2018.



	May	June	July	August	September	October
2017	185	202	186	155	138	133
2018	184	148	191	161	188	192

The highest TFP admission was reported in October 2018 next to June 2017 in the zone. Moreover, SAM admissions are increasing from August to October for the year 2018 compared to same three months of last year. On contrary, May-July 2018 was lower compared to the preceding year 3 months admissions. This variability in admission trend reveals that, as mentioned above, the HH food availability is compromised by different factors like decrease in meher crop production and increase in market price.

Flooding

In the last six months there is flooding in 3 districts of Silte zone this districts are Silti, Lanfuro and Dalocha. Due to flooding 6040 people are affected and 2 persons were dead. There is no disease outbreak occurred due to the flooding and there are no displaced persons.

District level findings

In Silte zone we have assessed Sankura, Lanfuro and Silti districts and the main health and nutrition results are given below.

Socio Demography

Zone/ District	Total Population						Number Of Health Facility and HEWs		
	M	F	Total	<5 yrs.	15-49y	Pregnant	HC	HP	HEW
Silti district	106025	110352	216378	33777	50416	7487	6	42	82
Lanfuro dist.	77105	78979	156084	21758	73614	5401	4	25	60
Sankura dist.	55228	57482	112710	17594	26261	3900	2	28	28
Silte zone	**506637**	**527317**	**1033954**	**161400**	**24091**	**85922**	**34**	**196**	**196**

Table 25: socio demography of 3 visited districts of Silte zone, SNNPR, Ethiopia, 2018.

In the three districts there were no special population such as pastoralist, refugees, internal displaced population and migrant workers. There are 2 HC without water, 42 HPs all without water in Silti district and 19 HPs all without water in Sankura and 12HPs without water in Lanfuro district.

Health profile

Coordination and management system

All visited districts have a PHEM coordination forum involving Governmental Organizations and other relevant stakeholders with distinguishable responsibilities and duties but none of them has regular meeting. All of the visited districts have 1 public health emergency management officer in district level and PHEM focal persons in HC level and they regularly report weekly PHEM report in regular basis. All have a public health emergency preparedness and response plans and they allocated an emergency response fund of 80000ETB in Sankura, 300000ETB in Silti and there is no budget in Lanfuro district.

Morbidity

Pneumonia is dominant cause of morbidity in both below five years children and above five in the visited three districts as we can see from the table below.

Districts	Rank	Top five causes of morbidity	
		Below five year	Above five year
SILTI	1	Pneumonia	Pneumonia
	2	Diarrhea(Non bloody)	Diarrhea (Non bloody)
	3	All respiratory disease	All respiratory disease
	4	Skin infection	AFI
	5	Unspecified eye disease	Skin infection
		Below five year	**Above five year**
LANFURO	1	Pneumonia	AFI
	2	Diarrhea	Typhoid
	3	AFI	UTI
	4	All respiratory disease	Epidemic typhus
	5	Unspecified eye disease	Pneumonia
		Below five year	**Above five year**
SANKURA	1	Pneumonia	Pneumonia
	2	AFI	AFI
	3	Respiratory disease	All respiratory disease
	4	Dyspepsia	Diarrhea
	5	Typhoid fever	Dyspepsia

Table 26: Top 5 causes of morbidity in 3 visited districts of Silte zone, SNNPR, Ethiopia, 2018.

Disease trends in the last six months

In Silti and Sankura districts scabies outbreak occurred with total of 2315 and 547 cases respectively. The outbreak is still ongoing and the districts are taking control measures but they claimed that there is a serious shortage of perimetrin and other scabies drugs. Six suspected meningitis cases were reported in Silti district in the past six months.

Regarding AWD and MEASELS there is no outbreak in the last six months in all visited districts.

Risk factors

Malaria in all visited districts there are risk factors for malaria like unprotected irrigations, malaria breeding sites and interrupting rivers. In Silti district there are 38 malarious kebeles, in Lanfuro district 11 malarious kebels with 64811 population at risk and 16 malarious kebeles with 53046 populations at risk in Sankura district.

Sankura and Lanfuro districts have 100% ITN distribution and 98% ITN distribution in Silti district. When we see the IRS performance, Lanfuro, Silti and Sankura districts sprayed

8401(100%), 11568(100%) and 4237(31.2%) unit structures respectively. All the 3 districts undergo prevention and control activities like source reduction, ITN distribution and IRS.

There is expectation of Meningitis outbreak in Silti district in coming months since the district is within the meningitis belt. AWD outbreak is anticipated due to the low water coverage of the districts and the latrine coverage is 29589(92%) and 41863(98%) in Sankura and Silti districts respectively. Measles was not occurred in visited districts in the past 3 years and the first quarter measles vaccination for 2011 EFY was 1904(100%) in Silti district, and 910(100%) in Sankura district. All the districts claimed that there is problem of transportation, shortage of budget, lack of skilled man power and logistic as challenges during epidemic response.

The trend of malaria in the past six months and comparison with the last years the same season was given below on the table.

Months	**SILTI**		**SANKURA**		**LANFURO**	
	2017	**2018**	**2017**	**2018**	**2017**	**2018**
May	37	36	8	2	3	0
June	47	44	12	3	5	0
July	62	2	10	4	0	0
August	43	0	11	1	3	0
September	39	3	17	4	1	0
October	31	0	22	0	4	0

Table 27: malaria case comparison in 3 visited districts of Silte zone, SNNPR, Ethiopia, 2018.

As we can see from the above table malaria trends are decreasing as compared to last years the same season this revels that, the districts are performing effective prevention and control measures on malaria.

Preparedness

When we see the availability of emergency drugs and supplies for the next 1 month

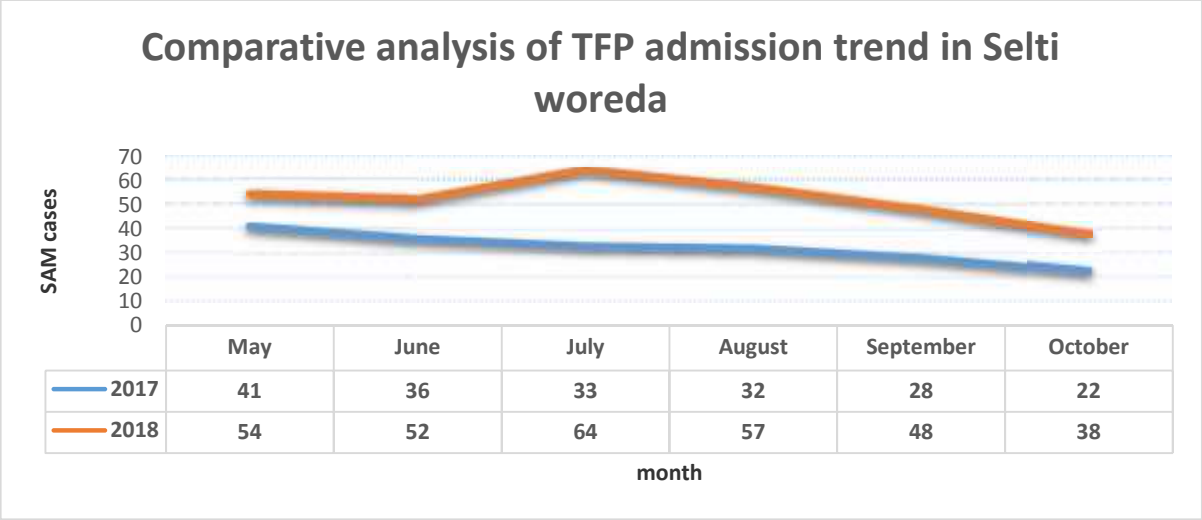
- Silti district has no amoxicillin, doxycycline, CTC kits, consumables like gloves and syringes for AWD management and RDT kit for meningitis.
- Lanfuro district has stocked out of RDT kit for malaria and meningitis.
- Sankura district claimed that they have no doxycycline, ringer lactate and CTC kit for AWD management and they have no RDT kit for malaria and meningitis.

Accordingly Sankura and Silti districts have allocated 80000 and 300000ETB for emergency management respectively were as, Lanfuro district has no budget allocated for this purpose.

Nutrition emergency

The nutrition conditions of all visited districts were almost the same as the zonal nutritional condition stated above. The pre-harvest estimate indicates that the production of crop plant is decreased critically in all the districts. Due to production loss and other factors, the market price of some crops like teff is increasing dramatically (price of teff is increased by 1000 birr in Silti district while compared with 2017 same month). Production loss of food crops and increased demand made the market price escalating. To this effect, the community residing in affected areas might experience household food gap and this in turn may contribute to TFP admissions by exposing the vulnerable children to acute malnutrition. With this fact, the SAM admissions in the districts were increasing both in OTPs and SC.

Figure 20: TFP admission trend in Silti district, Silte zone SNNPR, Ethiopia, 2018.



The above graph clearly indicates that, throughout all months of 2018 the TFP admission is increasing while compared to the last year same months. Moreover children that have been discharged from OTPs have been referred to TSF support only in Lanfuro district but the other districts of Silte zone have not included in this program. The screening performance of all the visited districts was doing well and it is 100% in October 2018 and all the districts perform screening in regular basis monthly (CHD).

Flooding

When we see the flooding history of the districts only Silti district have faced flooding in the past six months and 10 kebeles were affected namely budo bedeno, Ashute, Shele washo, koflela, Mirab, Abode, Dabarango, Tuto zubare, Balo and Sedagora. 1450 population was affected by the flooding off which 72 were children below 5 year and 70 were pregnant and lactating women. Also 2 persons were dead due to the flooding but there is no outbreak occurred due to the flooding.

Gaps/Challenge:

- Low Budget allocation for PHEM at District level
- Multi-sectorial Epidemic Prevention and Control Committee have no regular meeting.
- Shortage of emergency drugs, CTC kits and meningitis laboratory supplies (RDT, LP).
- Poor data management in district level.
- Lack of Logistics/Transportation

Recommendations

- Multi sectorial PHEM coordination forum should be functional on regular bases irrespective of the epidemics occurrence.
- Adequate budget should be allocated for emergency response especially in Lanfuro district.
- Adequate Emergency drug and medical supplies should be available at zonal level and district level.
- Perimetrin and other scabies management drugs should be provided in Sankura and Silti districts.
- The coverage of safe water should be improved in all visited areas and heath institutions.
- Special emphasis should be given by the government and concerned bodies to minimize malnutrition case in the upcoming months in vulnerable districts of the zone.
- PHEM officers in all districts should be given basic level PHEM and RRT trainings.
- There should be good data management practices in all the districts.

CHAPTER VIII - PROTOCOL/PROPOSAL FOR EPIDEMIOLOGIC RESEARCH PROJECT

Assessment of Knowledge, Attitude and Practices towards Scabies prevention and control strategies- Humbo district, Welayta zone SNNP Region, Ethiopia

April, 2019

Addis Ababa University

Faculty of Medicine

School Of Public Health

Master of Public Health

Research Project

This Proposal was submitted to Addis Ababa University the School of Public Health in Partial Fulfillment of the Requirements for the Degree of Masters in Field Epidemiology.

Name of investigator	Kalkidan shimelis (DVM)
Name of advisors	Dr. Adamu Addisie
	Dr. Fufa Abunna
Full title of the project	Assessment of Knowledge, Attitude and Practices towards Scabies prevention and control strategies- Humbo district, Welayta zone SNNP Region, Ethiopia April, 2019.
Duration of project	Five months
Study area	Humbo district, Welayta zone, SNNPR, Ethiopia
Total cost	68,649 ETB
Address of the investigator	Tell__ 0912712819 Email__ shkalkidan@gmail.com

Assessment of Knowledge, Attitude and Practices towards Scabies prevention and control strategies- Humbo district, Welayta zone SNNP Region, Ethiopia

April, 2019

1. INTRODUCTION

Scabies is an ectoparasitic infestation of the skin caused by the human itch mite, *Sarcoptes scabiei* var. hominis. Human scabies is a microscopic mite that burrows into the upper layer of skin where it lives andlays its eggs [1]. Sarcoptes scabiei undergoes four stages in its life cycle: egg, larva, nymph and adult. Females deposit 2-3 eggs per day as they burrow under the skin. Infestation begins when one or several pregnant female mites are transferred from the skin of an infected person to the skin of an uninfected person [1].

Scabies is transmitted primarily through prolonged, direct skin-to skin contact with an infected person and may also be transmitted through shared clothing, towels, bedding, linens, carpets, and furniture [2]. An infected person can spread scabies even if he/she does not have symptoms. On a person, scabies mites can live for as long as one to two months and 2 to 5 days on surfaces (off a person). A person is no longer considered contagious 24 hours after start of effective treatment. On a person, scabies mites can live for as long as 1-2 months. Off a person, scabies mites usually do not survive more than 48-72 hours. Scabies mites will die if exposed to a temperature of 50°C (122°F) for 10 minutes [3].

The most common signs and symptoms of a typical scabies infestation are intense itching (pruritus) especially at night and a pimple-like (papular) itchy rash. The rash may contain tiny blisters (vesicles) and scales. Tiny, raised, crooked grayish-white or skin-colored burrows are sometimes seen on the skin; the burrows can be a centimeter or more in length. The itching and rash may affect any part of the body, or may be limited to common sites like the webbing between the fingers, wrist, elbow, armpit, shoulder blades, breasts, waist, genitals, buttocks, and knees. Skin sores and secondary bacterial skin infections can occur due to scratching of affected areas [4].

Scabies is an important disease of children, but it occurs in both sexes, at all ages, in all ethnic groups and at all socioeconomic levels and personal hygiene is an important preventive measure

and access to adequate water supply is important in control [5, 6]. Scabies is a skin disease known to humans for at least 2,500 years [7].

Case Definitions

- **Suspected case**: A person with signs and symptoms consistent with scabies.
- **Confirmed case**: A person who has a skin scraping in which mites, mite eggs or mite feces have been identified by a trained health care professional.
- **Contact**: A person withoutsigns and symptoms consistent with scabies who has had direct contact (particularly prolonged, direct, skin-to-skin contact) with a suspected or confirmed case in the two months preceding the onset of scabies signs and symptoms in the case.
- **Epidemiologically linked case: -** Is a suspected case, which has contacts with laboratory confirmed case or another epidemiologically confirmed case.
- **Index case:-**Suspected or confirmed scabies case (case that met the criteria for standard scabies case definition) that initiates the public health attention (may or may not visit health facility) and of course, the first case who possibly the source of infection for the other cases emerging.

Statement of the problem

In Ethiopia, scabies is common especially during natural or manmade disasters such as flooding, drought, civil war and conflict, poor water supply and sanitation, and overcrowding living condition. According to public health emergency measures surveillance report scabies is becoming beyond sporadic clinical cases but is turn to be a public health concern and affecting wider geographic areas and population groups especially in drought affected nutrition hotspot districts [2].

In this regard, the Federal Ministry of Health (FMOH) in collaboration with partners established multi-sectoral intervention approach for rapidly stop community level transmission of scabies outbreak in affected and high risk districts selected based on nutrition and scabies outbreak risk criteria. Planned interventions include Health, WASH and Communication for development [2-5].

SNNPR health bureau receives scabies report from different zones in weekly report format. One of high scabies reporting zones is Welayta zone and from the zone Humbo district is highly affected and there is an outbreak of scabies which affected more than 1700 individuals from September to November 2011 EFY in the district.

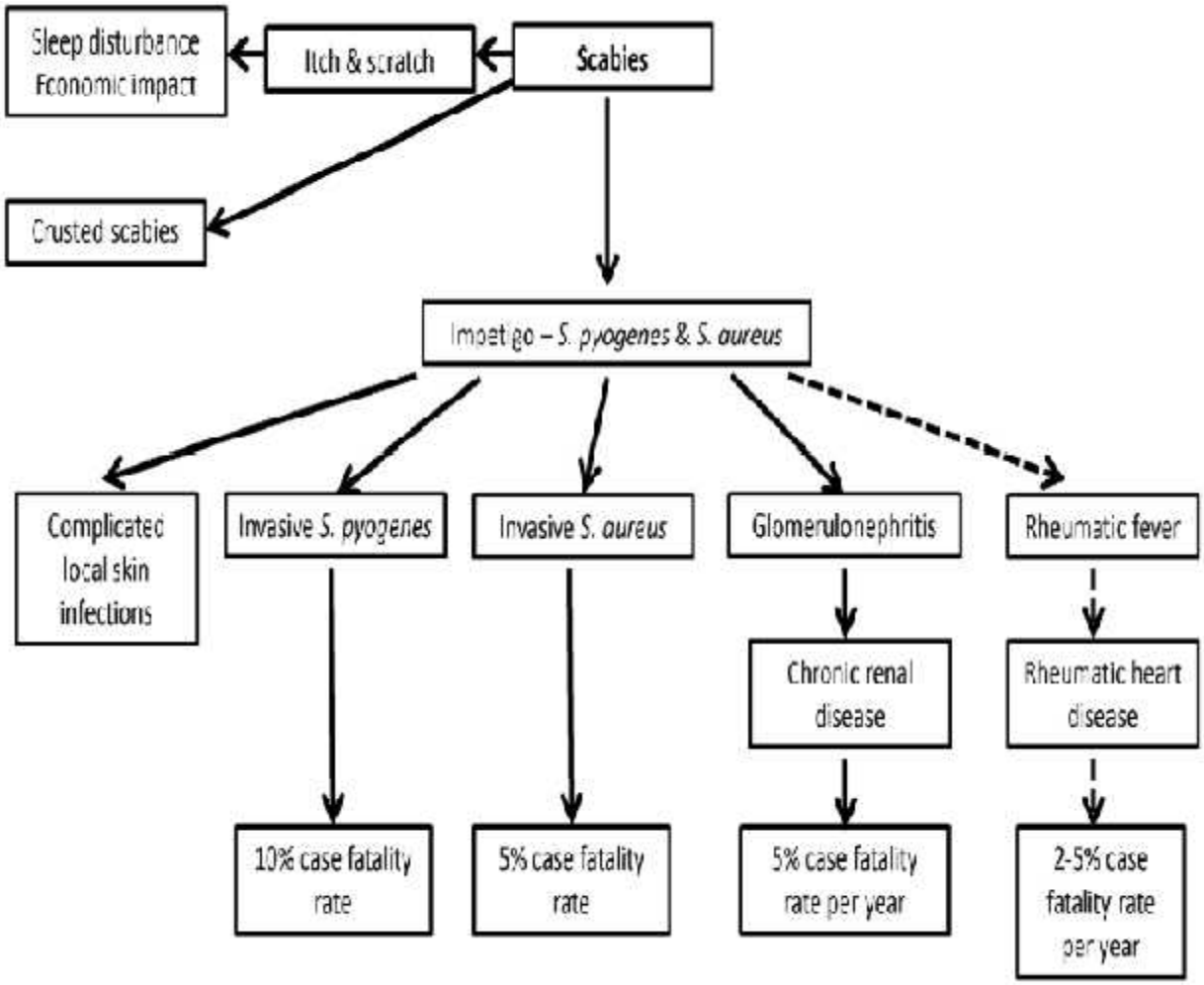
Significance of the study

The main objective of disease prevention & control programs is to stop local transmission of communicable disease, and surveillance is a principal strategy for achieving this. The capacity of communicable disease surveillance systems to provide accurate information on the distribution and trends of disease varies from one district to another. Moreover, surveillance is mainly influenced by the extent to which patients seek treatment, whether patients use public sector health facilities, the proportion of patients that receive a diagnostic test, and the completeness of recording and reporting systems.

Assessment of disease surveillance system and control measures at regional and zonal level, especially in those district with high disease transmission will remain crucial to obtain reliable estimate of surveillance and control measures status.

In this case, epidemiological assessment of communicable disease like scabies surveillance and control interventions at community level in this district is necessary to measure the status of scabies KAP among respondents (> 15 years of age) in this district, towards prevention and control efforts and to identify the gaps and intervene accordingly. Moreover, this will contribute for the improvement of the district health provider's surveillance knowledge and control strategy.

Figure 21: The severity of complicated scabies



2. OBJECTIVES

General objective

- To assess Knowledge, Attitude and Practices of communities towards scabies prevention and control strategies in Humbo district Welayta Zone SNNPR.

Specific objectives

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

3. METHODS AND MATERIALS

Study area and study period

The study area Humbo district of Welayta zone is 395 km south of Addis Ababa and 20 km from the zonal capital Sodo town. The district is surrounded by Sodo zuriya district in the North, Gamo Gofa zone in the South, Sidama zone and Lake Abaya in the West and East respectively. Humbo district is divided in to 2 urban, and 39 rural kebeles. The district has projected total population of 167,018 for 2018/2019 (projected from the 2007 national census). The study will be conducted from April to August 2019.

Study Design and Data Collection

A community based descriptive cross sectional study design will be used to assess knowledge, attitude and practice of the community towards scabies prevention and control strategies. Semi-structured questionnaire will be administrated to conveniently selected HH in urban & rural Kebeles; and document reviews will be used to collect data.

Source Population:

All households living in Humbo district of Welayta Zone SNNPR

Study population:

Households in the selected Kebeles of the district

Sampling Procedure

The districts total 39 rural and 2 urban kebeles initially be stratified into rural and urban areas. Then, 19 rural and 1 urban kebeles will be selected by lottery from the total kebeles in the district. Each kebele will be considered as one cluster and simple random sampling method will be used to recruit study subjects. H.H registry or family folder will be used as sampling frame. Randomly selected households with targeted age group will be included in the study. If random selection falls to households with no eligible age group the next house hold will be included to the study.

Sample Size Determination

The sample size will be determined by considering the proportion at 50% ”P” with 95% confidence level and 5% marginal error. The sample will be calculated by using single proportion formula as shown below.

$$n = \frac{(z\alpha/2)^2 P (1-P)}{d^2}$$

Where, $z\alpha/2=1.96$, $p=50\%$ and $d=0.05$

$$n = \frac{(1.96)^2 0.5(1-0.5)}{(0.05)2} = 384$$

10 % non-Reponses rate = 38

n = 422

Where

n= the number of participants to be interviewed

d= margin of error

P= proportion of participant

Inclusion and Exclusion Criteria

Inclusion Criteria

Any houses hold head or adult member of the household, volunteer to participate in the study and avail at home during data collection period.

Exclusion Criteria

People residing temporarily and those who refused to participate were excluded as well as family members from same house hold.

Variables

Dependent Variable

Scabies diseases

Independent Variables

Age

Sex

Number of family

Frequency of bathing

Educational level of the family

Frequency of changing clothes

Sleeping with scabies patients

Source of water fetched

Data Analysis:

The data will be entered and analyzed using Epi Info Version7, Microsoft excel and SPSS and results will be presented using descriptive table and charts.

Quality Control

Training will be given for all data collectors prior to data collection period. Close supervision will also be conducted during data collection. The investigator will check missed and incorrect data and revisiting will be conducted to fill missed information.

Ethical Considerations

The study will be conducted after ethical clearance from school of public health (SPH) and Addis Ababa University Medical faculty Institution Review Board. Supporting letter will also be written by SPH to SNNPR health bureau, Welayta Zonal health Department and Humbo district health office. Confidentiality of the information will be assured and privacy of the information will also be maintained. Additionally, informed consent will be developed and we will ask for

the interviewees their consent to take part in the study .They will be enrolled in the study if they decide to do so. They have also the right and the freedom to withdraw them from the study and are not obliged to answer all of the questions.

Dissemination of results

The research findings will be submitted to Addis Ababa University School of public health (SPH) and disseminated to Humbo districts health office, Welayta Zone health Department, SNNP Regional Health bureau, Federal Minister of Health and other fund rising bodies. Therefore they can use the results for planning and implementation of intervention programs. Any attempt will also be made to present the paper on annual scientific meeting and conferences and to publish on reputable research journals.

Expected outcomes

The factors that may influence people against prevention & control of scabies will be clearly identified.

4. WORK PLAN (PROJECT MANAGEMENT)

Work plan for major activities to be conducted during the project.

Phase	activity	April (weeks)				May (weeks)				June (weeks)				July (weeks)				August (weeks)			
1	Proposal preparation																				
2	Submission of draft proposal for mentors																				
3	Accept suggestions and comments from mentors																				
4	Submit proposal to the school for approval																				
5	Selection & Training of data collectors																				
6	Data collection																				
7	Data																				

	analysis and report writing																				
8	Present draft complied result for comment																				
9	Final thesis report																				
10	Present compiled work																				

Table 28: Work plan for major activities to be conducted during the project from April – August 2019, Humbo district, SNNPR, Ethiopia.

5. BUDGET

Cost breakdown for epi project 2019

Budget category	Measurement	Quantity	Number of days	Unit cost	Total cost
1 Training					
1.1. Principal investigator	Person * no of days* unit cost	1	5	300	1500
1.2. Field supervisors	>>	4	7	200	5600
1.3. Data collectors	>>	10	10	200	20,000
1.4. Data entry clerk	>>	3	15	200	9000
Subtotal 36,100					

2 Transport					
2.1. Fuel	Liters	405	1	20	8100
2.2. Car rent	Number	1	15	1200	18,000
Subtotal					**26,100**
3.Stationary supplies					
3.1.Questioner printing and duplication	number	500	--	4	2000
3.2. Pen	pack	2		170	340
3.3. Pencil	Pack	2		25	50
3.4. Eraser	Number	12		20	240
3.5. Pencil sharper	Number	12		15	180
3.6. Flip chart	Number	2		85	170
3.7. Marker	Pack	2		100	200
Subtotal					**3180**
Total					**65,380**
Contingency 5%					**3269**
Grand total					**68,649**

Table 29: Budget break down for major activities to be conducted during the project from April – August 2019, Humbo district, SNNPR, Ethiopia.

6. REFERENCES

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ANNEXES

Data Collection Tool for Health Profile Description

Health Profile of _____ District

Name of the data collector----------

Date: ----------Respondent (s):----------

1. Historical Aspects of the area (only if relevant)

_____

_____

_____

2. Geography and Climate (including map, altitudes, agro ecological zones etc…)

Map of the Woreda----------

Location _____ _____ _____

Altitude _____

Annual rain fall_____

Mean annual temperature in ^{O}C ----------

Climatic zones_____ _____ _____

The major crops in the area ----------

Main food crops of the area----------

3. Political and Administrative Organization

No of Kebeles----------Urban----------Rural----------

Nearest Kebele---------- (---------Km from the Woreda center)

Remote Kebele---------- (----------km from the Woreda center)

List their names _____

_____

Woreda boundary including degree.

North ----------South----------East----------West

4. Population and population structures

Total population_____Total HH ----------

Population by Kebele ----------

Male _____Female _____

Under 1yrs _____Under 3 yrs. ----------Under 5yrs----------Under 15yrs----------

Women of childbearing age (15-49years) ---------Pregnant women ----------Above 64yrs. --------

Sex ratios_____ urban _____rural_____,

Ethnic composition _____ _____ _____

Languages of the district----------

Official language (Work language) ----------

Religion –Protestant----------Orthodox----------Muslim----------catholic ------- other

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

Average income/year _____Source

Economic status ?

High----------Low----------Medium---------- other

Productivity----------

6. Education

6.1.Total Number of Schools _____ Gov._____ NGOs. _____ Private Schools _____

KG _____ Gov._____NGOs._Private Schools_

Primary _____ Gov._____NGOs._Private Schools_

Secondary ____ Gov._____NGOs._Private Schools_

Preparatory ____Gov._____NGOs._Private Schools_

6.2.Total Enrollment

KG M_____ F_____ Total_____

Primary M_____ F_____ Total_____

Secondary M_____ F_____ Total_____

Preparatory M_____ F_____ Total_____

6.3.School distribution by Kebele----------

6.4.Number of Schools with access to water----------

6.5.Reasons for absence of water for certain schools----------

6.6.Types of School clubs Available(Number & Name) _____

_____

_____

6.7.School clubs (activities) other than education and their major and current functionalities.

A. _____

B. _____

C. _____

D. _____

E. _____

6.8.Schools access to road---------- Access to Tel. ---------- Access to electricity(Main and/or Generator Supply)--------

6.9.Literacy status (%) ----------Illiterate (%) ----------

6.10. Schools with Access to Latrine Facility:

A. One Block Latrine for the school as a whole:_____

B. Two Block Latrine for Male & Female Separated:_____

C. No Latrine at all: _____

6.11. Total Dropout rate (Total Registered during the year - Total Completed)_____

___

6.12. Proportion of Female dropout rate_____

6.13. Possible reasons for dropout rate_____

_____

_____

7. Facilities (Transport, Telecommunication, Power supply,)

Woreda district health structure.

Number of health facility in the district

Gov.	NGOs	Private	Standard		
HOSP	-------	--------	-------	Pop ratio---------	--------
HCS	-------	--------	-------	Pop ratio---------	--------
HPS	-------	--------	-------	Pop ratio---------	--------
Clinics		----------	-------		
Diagnostic lab		----------	------		

How many of the health centers have access to

transportation_____ (%), telecommunication---------- (%), Electricity_____ (%)

Water facility---------- (%)

How many HPs have access to transport-------, telephone---------- power?, --------- water?

8. Water Sources

8.1.Types of Water supply Sources Available:_____

_____

8.2.Number of Water schemes Constructed during the year:_____

8.3.Functional water sources during the year_____

8.4.Non Functional water sources during the year _____

8.5.Reason for non-functionality_____

_____

8.6.Average Cost needed per Water scheme for construction:_____

8.7.Average service year/duration of one Water scheme:_____

8.8.Number of Kebeles with Protected water supply source:_____(Lists of these Kebeles_____

_____

_____

_____)

8.9.Water supply coverage of the woreda during 2005:_____

8.10. What are the Water sources of population uncovered in the supply:_____

_____

_____

_____

___

8.11. Possible reasons for the shortage of water_____

_____

_____

_____

9. Disaster Status in the area

Was there any disaster in the district in the last years?

_____

10. Vital Statistics and Health Indicators

Infant Mortality Rate----------Child Mortality Rate----------

Crude Birth Rate----------Crude Death Rate----------

Maternal Mortality Rate----------Contraceptive Prevalence rate_____

ANC coverage----------Delivery coverage----------

PNC coverage ----------

Immunization Coverage;

Polio3----------Pentavalent3_____Measles ----------

Health staff to population ratio for each profession

Health officers ----------Nurses --------Midwifery --------Medical lab_____

Pharmacy _____Env'tal ___ HEWs, rural --------- Urban---------

Others----------

11. Health Services

Health institution to population ratio_____ Health service coverage----------

Top and leading causes of OPD visit in adults and children

1. _____ 1, --------
2. _____ 2, --------
3. _____ 3, --------
4. _____ 4, ---------,
5. _____ 5, ---------,
6. _____ 6, others-----
7. _____ 7, Admission causes in Children----------
8. _____ ----------
9. _____ 8, Death cause----------
10. _____ ----------

12. Others----------

13. Admission causes----------

14. Death cause----------

Health budget allocation from last year------

Health budget for emergency condition------

15. Community Health Services;

Status of services provided by community health workers namely:

TBAs ----------

CHWs/ Dep't army----------

HEWs ----------

Other ----------

16. Status of Primary Health Care Components – with focus on the eight PHC elements

MCH/FP trend 3 or 5years (recent to last)

EPI

PV1 ----------

Polio3 ----------

Pv3----------

Measles ----------

Environmental Health

Health Education

Endemic diseases;

Malaria

Identified malarious Kebele in the district ----------

Recent trends of 3(5) yrs. malaria data. ----------

_____

Malaria prevention and control

IRS coverage trends (3/5) yrs.

List of chemicals used since the start of IRS and their use of duration in the district.

ITNs distribution recent 3/5 year coverage

Environmental management

TB/Leprosy

Total TB cases_____ PTB negative_____ PTB positive____ Extra PTB _____

TB detection rate trend----------

TB treatment success rate trend ----------

TB cure rate---------- TB defaulter rate _____Death on Treatment _____

TB cases screened for HIV_____TB cases positive for HIV----------

Leprosy cases----------

HIV/AIDS;

HIV tested/screened trend and population type (student, rural pop, urban pop, HF visitors)

HIV screened age group----------

HIV positives trend and age group----------

PW screened trend----------Pw +ve trend----------

HIV Incidence trend ----------

Pw ever enrolled in PMTCT----------

PLWHA ever enrolled in ART_____PLWHA currently enrolled in Art----------

PIHCT screened _____**PIHCT +ve ----------**

VCT screened----------VCT +ve----------

Nutritional status in the district

Malnuritioned cases admitted to OTP trend----------

Sc admission trend----------

Epidemic prone diseases ----------

What do you think the main problems of the district ----------
---

Discussion of the highlights and the main findings of the health profile assessment and description

---

---

17. Problem Identification and Priority Setting – set priority health problems based on the public health importance, magnitude, seriousness, community concern, feasibility etc.

Questionnaire for Scabies Outbreak Investigation in Humbo woreda, Welayta Zone, SNNPR, Ethiopia, January 2018.

A. Identification

Interviewer's name_____ Phone number _____

Date of Data collection: _____

Region_____ Zone_____ District_____ Kebele_____ Got _____

Status of respondent: 1. Case 2. Control

B. Socio-demographic information

1. Age in years_____ or in month _____
2. Sex 1. Male 2. Female
3. Ethnicity 1. Hadiya 2. Halaba 3. Silte 4. Amhara 4. Other/specify_____
4. Religion 1. Orthodox 2. Muslim 3. Protestant 4. other/specify_____
5. Occupation 1. Farmer 2. Merchant 3. Unemployed 4. Employed 5. Student 6. Daily laborer 7. NA 8. Other/specify _____
6. Educational status
   1. Illiterate 2. Read and write only 3. Primary 4. Secondary 5. Tertiary 6. NA
7. Parents of case/control educational status if the respondent is a child (< 7 years of age)
   Mother-1.Illiterate 2. Read and write only 3.Primary 4.Secondary 5. Tertiary
   Father- 1.Illiterate 2. Read and write only 3.Primary 4.Secondary 5. Tertiary
8. Marital Status 1. Single 2. Married 3. Divorced 4. Widowed 5. NA
9. How many Family members residing with you: _____
10. Is there any person infested with Itching skin rash and Crusts on the skin in your house?1.yes 2.No
11. If Yes to Q9, number of sick person_____

C. Questions related to knowledge of respondents about the disease

12. Do you know what scabies is? 1. Yes 2.No
13. What do you think the cause of scabies? 1. Parasites 2. Consequence of curse 3. Witchcraft 4. other/specify_____
14. How do you think scabies is transmitted? (You can pick more than one response). 1. By direct skin to skin contact with ill person 2. By sharing clothes of ill person 3. Hugging (hold in your arms) 4. Other/specify _____
15. Do you think scabies preventable diseases? 1. Yes 2. No 3. Don't know
16. If yes for Q12, How it can be prevented?

1. Personal hygiene& sanitation 2. Avoid contact with Scabies patient(s) 3. Don't know 4. Other/specify _____

17. Who do you think can be affected more by Scabies?
    1. Children less than 5 years old 2. Children between 5-18 years 3. People over 18 years old 4.People of any age group 5. don't know
18. Where did you go first when you get Scabies?
    1. Health Facility 2. Traditional Healers 3. Holy Water 4. Stayed at home 5.other/Specify_____
19. How do you think Scabies can be cured?
    1. Using modern medicine 2. Using traditional Medicine 3. Holly water 4. by feeding nutritious foods 5. Keeping the sick person in door 6. Other (Specify) _____

D. Clinical features & management of the disease*(for cases ONLY)*

20. What are the signs &symptoms of the disease?

A. skin rash: 1. Yes 2. No D. relentless itching: 1. Yes 2. No

B. red bumps and blisters: 1. Yes 2. No E. Crusts on the skin 1. Yes 2. No

C. tiny red burrows: 1. Yes 2. No F. Sign of secondary infection (observe) 1. Yes 2. No

21. Site of rash on the body (you can select as more responses as possible)
    1. Flexor wrist surface 2.inter digital spaces 3. Abdomen 4. Inter gluteal cleft 5.Buttocks 6.Highs 7. Elbow 8.Feet 9.Ankles 10. Anterior axillary (under arm) folds. 11. Other/specify_____
22. Date of rash onset ____/_____/_____(dd.mm. yy)
23. How long have you had a rash? (Duration of rash) _____days/months
24. Did you visit health facility for this illness? 1. Yes 2. No
25. If yes, date went to facility____/____/_____)
26. Treatment given 1.Yes 2. No
27. If yes, type of treatment
    1. 5% Permethrin cream 2. 25% benzyl benzoate lotion (BBL) 3. 10%Sulfur ointment 4. Ivermectine
28. Status of the patient after treatment has given
    1. Patient cured 2. Partially cured / Improved 3. Re-infected 4. Other/specify_____
29. How long were you ill before visiting the health facility? _____ days/hours

E. Questions related to risk factors

30. Did you travel outside of your village _____? 1. Yes 2. No
31. If the answer is no for question number 29, where have you been?
    Woreda _____ Keble _____ Got_____
32. Did you contact a person who has been infested with scabies? 1. Yes 2. No
33. If yes, type of contact
    1. Sleeping together 2.playing together 3. Sharing clothes 4. Other/specify_____
34. What is the **source** of water for your personal hygiene, drinking and cooking purposes? 1. Pipe water 2. Spring 3. Hand dug well 4. Deep well 5. Pond 6. River 7. Other/ specify _____
35. What is the **amount** of water usually found in the house for drinking, cooking & personal hygiene in a daily bases?
    1. Less than 20 liters 2. 21-40 liters 3. 41-60 liters 4. 61-80 liters 5. more than 81 liters
36. In order to fetch water, what is the walking distance from your house to the water source?

1. Less than 500 meters 2. 500-1000 meters 3. 1-5 kilometers
4. 5-10 kilometers 5. More than 10kilometers

37. What is queuing time at a water point/source?

□ Less than 30 minutes □ 31-60 minutes □ 1-2hours □ more than 2 hours

38. Do you have soap for personal hygiene & washing clothes whenever there is a need? 1. Yes 2. No
39. If yes, how often do you wash your clothes?
    1. Two times per week 2. Once in a week 3. Once per 2 weeks 4. Once in a month
    5. Other/specify_____
40. How often do you take shower?
    1. Two times per week 2. Once in a week 3. Once per 2 weeks 4. Once in a month
    5.Other/specify_____
41. If your answer for Q37 is no, what is the reason? _____
    _____
42. How often do you change your clothes/wears?
    1. Two times per week 2. Once in a week 3. Once per 2 weeks
    4. Once in a month 5. Other/specify_____
43. Do you wash your hand regularly? 1. Yes 2. No
44. What is the area of the house where the respondent is living (in meter square)? _____
45. Are you living in an area/kebele affected by flood or any disaster? 1. Yes 2. No
46. If yes, was your home affected by the flood or any disaster? 1. Yes 2. No
47. What was the damage in your livelihood that was caused by the flood or disaster? _____

S/N	Risk factor	Status of interviewee			
		Case		Control	
		Yes	No	Yes	No
1	Low educational level (illiterate & primary)				
2	Skin contact with a person who had scabies within the last two months				
3	History of travel to scabies endemic area within the last two months				
4	Showering less than one times per week				
6	Changing cloths less than two times per week				
7	Availability of soap for personal hygiene & cloth washing				
8	Infrequent use of soap				
9	Number of family members greater than six who are leaving together				
10	Sharing Clothes with patient of scabies				
11	Limited access of water for personal hygiene				
12	Number of persons Sleeping on a bed				
	Alone				
	With one person				
	Two and above				

SURVEILLANCE SYSTEM EVALUATION QUESTIONER

QUESTIONER FOR THE ZONE HEALTH DEPARTMENT AND DISTRICT OFFICE BACKGROUND

Zone Health office ---------- District Health office ----------

General Hospital ----------

Catchment population ---------- Respondent Name (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 PHEM officer/Health Center surveillance focal person?

A. Yes B No

3. How frequently you communicate with the District health office PHEM officer / Health center surveillance focal person 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 office communicating the HCs and HPs focal person 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 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 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 etc.) 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 (observe) 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 bulletin

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

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

4. Had you experienced shortage of drugs, vaccines and supplies in 2010 EFY?

A. Yes B. No

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

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? Observe minute

A. Yes B. No C. Not Applicable

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

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 sectorial 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 office 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 2010 EFY?

A. Yes B. No, list if any

2. Did you have outbreak investigation check list? Observe

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 2010 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 2010 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 2010 EFY?

A. Yes B. No

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

5. If answer for Q3 is yes, how many times did you supervise each HC and HP in 2010 EFY?

---

6. Had you reviewed about surveillance practice by higher level supervision?

A. Yes B. No

7. Did you have regular supervision checklist?

A. Yes B. No

8. If answer for Q7 is No, how did you supervise the health facilities & Health posts?

---

9. Were you supervised by higher level officers in 2010 EFY?

A. Yes B. No

10. If answer for Q9 is yes how many times in 2010 EFY? ----------

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

A. Yes B. No

12. If answer for Q11 is No, why?

---

13. If answer for Q11 is yes, for how many HCs and HPs did you send a feedback in 2010 EFY?

---

14. Had you received feedback from higher level supervisors in 2010 EFY?

A .Yes B. No

15. If answer for Q14 is yes how many feedbacks did you received in 2010 EFY?

---

16. Had you faced any challenge on supervision and feedback in 2010 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 to15min D.>15 min

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

II. Flexibility

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?

A. Yes B. No

2. Did you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement?

A. Yes B. No, add your explanation ----------

3. Is the system easy to add new variables?

A. Yes B. No

4. Is the surveillance system easy to integrate with other systems?

A. Yes B. No

5. Is the surveillance system easy to add new disease on report?

A .Yes B. No

6. Is the system easy to add new information technology?

A. Yes B. No

III. Data quality

1. Are all reported forms Complete?

A. Yes B. No

2. If answer for Q1 is No, how many unfilled spaces are in your 2010 EFY? ----------

3. Percentage of unknown or blank responses to variables from the total reports of 2010 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 2010 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

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

V. 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

VI. Timeliness

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 2010 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 AND HOSPITAL

BACKGROUND

District _____ District Hospital ----------

Health center_____ Catchment population _____

Respondent Name _____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 office 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 Health Posts 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

1. Is there a national manual or protocol for 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 etc) 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 (Observe)

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 2010 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 sectorial 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 2010 EFY?

A. Yes, list if any ----------B. No

2. Did you have outbreak investigation check list?

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. staffs of Health Bureau

D. Experts organized randomly E. Health facility staffs F. other----------

6. Had you faced any challenge in outbreak investigation in 2010 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 2010 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 HPs according to your plan in 2010 EFY?

A. Yes B. No

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

---

5. If answer for Q3 is yes, how many times did you supervise each HP in 2010 EFY?

---

6. Had you reviewed about surveillance practice by higher level supervision?

A. Yes B. No

7. Did you have regular supervision checklist?

A. Yes B. No

8. If answer for Q7 is No, how did you supervise the HPs? ----------

9. Were you supervised by higher level officers in 2009 EFY?

A. Yes B. No

10. If answer for Q9 is yes how many times in 2010 EFY?

---

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 2010 EFY?

_____

14. Had you received feedback from higher level supervisors in 2010 EFY?

A. Yes B. No

15. If answer for Q14 is yes how many feedbacks did you received in 2010 EFY?

---------- ----------

16. Had you faced any challenge on supervision and feedback in 2010 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 to15min

D. >15 min

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

2. Flexibility

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?

A. Yes B. No

2. Did you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement?

A. Yes B. No , Add your explanation ----------

3. Is the system easy to add new variables?

A. Yes B. No

4. Is the surveillance system easy to integrate with other systems?

A. Yes B. No

5. Is the surveillance system easy to add new disease on report?

A. Yes B. No

6. Is the system easy to add new information technology?

A. Yes B. No

3. Data quality

1. Are all reported forms Complete?

A. Yes B. No

2. If answer for Q1 is No, how many unfilled spaces are in your 2010 EFY report? ----------

3. Percentage of unknown or blank responses to variables from the total reports of 2010 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 2010 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 surveillance focal persons 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

6. Timeliness

1. Are all reporting sites reporting on time?

A. Yes B. No

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

3. Completeness

1. Are all reporting sites reporting?

A. Yes B. No

2. Percent of HPs that send report of each week in 2010 EFY ----------

8. 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 POST BACKGROUND:

Health center_____ Health Post_____

Catchment population _____

Respondent Name _____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 surveillance focal person?

A. Yes B. No

3. How frequently you communicate with the Health center surveillance focal person 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 surveillance focal person 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

6. Was there national manual for surveillance?

A. Yes B. No C. NA

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

A. Yes B. No C. NA

8. Did you have line list for reporting outbreaks?

A. Yes B. No C. Not Applicable

C. 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?

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 2010 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. Was there a budget for epidemic response?

A. Yes B. No

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

A. Health post staffs B. Health center staffs C. other----------

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

A. Yes B. No C. Not applicable

13. If answer for Q12 is NO, how did you address emergencies?

E .Outbreak investigation and case confirmation assessment

1. Had you investigated any outbreak in 2009 EFY?

A. Yes, list if any B. No

2. Did you have outbreak investigation check list?

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----------

4. Who was responsible to investigate an outbreak?

A. RRT B. HEWs C. staffs of health bureau

D. experts organized randomly E. Health center staffs F. other----------

5. Had you faced any challenge in outbreak investigation in 2010 EFY?

A. Yes B. No

6. If answer for Q6 is yes,

A. List the challenges

B. List the alternatives that you take to tackle the challenges

---

Field Supervision and feedback assessment

1. Were you supervised by higher level officers in 2010 EFY?

A. Yes B. No

2. If answer for Q1 is yes how many times in 2010 EFY?

---------- ----------

3. Had you received feedback from higher level supervisors in 2010 EFY?

A. Yes B. No

4. If answer for Q3 is yes how many feedbacks did you received in 2010 EFY?

---

5. Had you faced any challenge on supervision and feedback in 2010 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 to15min D. >15 min

2. Flexibility

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?

A. Yes B. No

2. Did you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement?

A. Yes B. No , Add your explanation ----------

3. Is the system easy to add new variables?

A. Yes B. No

4. Is the surveillance system easy to integrate with other systems?

A. Yes B. No

5. Is the surveillance system easy to add new disease on report?

A. Yes B. No

6. Is the system easy to add new information technology?

A. Yes B. No

3. Data quality

1. Are all reported forms Complete?

A. Yes B. No

2. If answer for Q1 is No, how many unfilled spaces are in your 2010 EFY report? ----------

3. Percentage of unknown or blank responses to variables from the total reports of 2010 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 2010 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 HEWs?

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

6. Timeliness

1. Are HEWs reporting on time?

A. Yes B. No

2. Completeness

3. Are all reporting sites reporting?

A. Yes B. No

4. Percent of HPs that send report of each week in 2010 EFY. ----------

8. 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 Malaria outbreak Investigation in ---------- District, ---------- Zone, SNNPR, Ethiopia, 2019

I. Socio-demographic information:

1. ID number of respondent_____ 2. Sex; M□ F □

3. Age in years_____

4. Address; Region _____Zone_____ Woreda_____ kebele_____village_____ GPS Coordinates; E _____N_____

5. Occupation; Employed □ unemployed□ Student□ Pastoralist□ farmer□ Other□

6. Total family members' _____

7. Ethnicity; Welayta □ Oromo □ Amhara □ Tigre□ Gurage □ Kanbata□ Other □

8. Religion; Orthodox□ Protestant □ Muslim □ Catholic □ Other □

9. Marital status; Married □ single □ Widowed □ Divorced□ Not Applicable□

10. Educational status; Illiterate □ Primary□ Secondary □ tertiary □ non-formal □

11. Case status; a) Case b) Control

II. Clinical presentations: *(For case only)

1. What was the first symptom? _____

2. When was the 1st symptom started (date of onset of symptoms) DD/MM/YY_____

3. What were others symptoms?

a) Fever: Yes □ No□, if yes duration of fever____ was it constant fever? Yes □ No□ or every other days fever? Yes □ No□

b) Vomiting: Yes □ No□ c) sweating: Yes □ No□ d) Diarrhea: Yes □ No□

e) Anorexia: Yes □ No□

Ask the following signs (M to Y) for complicated malaria only

c) Altered consciousness Yes □ No□,

d) Not able to drink or feed yes □ No□

e) Convulsion Yes □ No□

f) Difficult breathing Yes □ No□

g) Bleeding Yes □ No□

h) Jaundice (yellowish coloration) Yes □ No□

4. Did you visit health facilities? Yes□ No□, if yes, when did you visit health facilities? DD/MM/YY_____

5. Was your blood samples taken? Yes-□ No □

6. If yes Q 5, what was the result: Positive □ negative □

7. Did you get any treatment? Yes □ No□, if yes, what treatment did you get?

(a) Coartem Yes □ No□, was it for PF Yes □ No□,

(b) Chloroquine? Yes □ No□, was it for PV Yes □ No□,

(c) Quinine tablets Yes □ No□, was it for pregnant and <5 Kg? Yes □ No□,

(d) Quinine injection Yes □ No□, was it for sever malaria Yes □ No□,

8. Other treatment given _____

9. Did you recover completely after the treatment? Yes-□ No □

10. Place of residence during 2 weeks before onset of illness;_____

III. Risk Factors: *(For both cases and controls)

1. Sleeping areas in side home _____outside home_____

2. Do you stay outside over night? Yes-□ No□

3. Is there anybody in your home with similar malaria signs and symptoms? Yes-□ No□

4. Did you travel outside your village in the past 2-3 weeks? Yes-□ No □

5. If Q 4 yes, indicate

(a) Date of travel DD/MM/Y_____

(b) The place of travel _____

(c) Date when you returned back DDMMYY_____

(d) Were there sick patients (same symptoms) in the place where you have been? Yes-□ No□

6. Do you have bed net in your household Yes-□ No□

If is yes, how often do you use Always□ Sometimes □ Never □

7. Do mothers and children given priority of using bed nets? Yes-□ No□

8. Number of bed nets in your home _____

9. Was indoor chemical spray conducted last year prior to the outbreak? Yes-□ No□

10. If Q 9 yes, how many times was sprayed? Once □ twice □ Three times and more□

IV. Environmental investigation

11. Place of stay during night; inside home □ outside home □, Specific living area_____

12. Is there any artificial water -holding containers close to your home and inside your home those could be a potential for mosquito breeding sited? Such as:

a. Old tires; Yes-□ No□

b. Plant in the containers /flower –pots; Yes-□ No□

c. Plant with temporary water pools; Yes-□ No□

d. Open deep well; Yes □ No□

e. Broken glass bottles; Yes-□ No □

f. Cans; Yes-□ No□

g. Uncovered plastic container; Yes-□ No□

h. Gutter to collect rainwater; Yes-□ No□

i. Uncovered water storage/ septic tank; Yes-□ No□

j. Stagnant water Yes-□ No□

13. Presence of larvae in breeding sites around the home or vicinity; Yes-□ No□

14. Types of house; screened □ unscreened □

15. Do you use repellents? Yes-□ No□,

16. Do you use protective clothing? Yes □ No □

17. Availability of Solid and liquid waste collection; Yes-□ No □

18. Presence of unprotected irrigation; Yes □ No □

19. Presence of Intermittent rivers cloths to the community Yes-□ No□,

20. Presence of tick grass; Yes-□ No□

V. Awareness assessment

21. Do you know sign and symptoms of malaria? ----------

22. How it is transmitted?----------

23. How it can be prevented? ----------