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

Ethiopian Field Epidemiology Training Program (EFETP)

Compiled Body of Works in Field Epidemiology

By
Serawit Elias

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

June/2017
Addis Ababa

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Mentors:

Professor, Alemayehu Werku (PhD)

Yeshitila Mogessie (BSc, Mph)

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Approved by Examining Board

_____ _____
Chairman, School Graduate Committee

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Mentors

_____ _____
Examiner1

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Examiner2

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List of abbreviations and acronyms

AAU-SPH- Addis Ababa university school of public health

AFP- Acute Flaccid Paralysis

AIDS- Acquired Immune-Deficiency Syndrome

ANC- Antenatal care

APSGN- Acute Post Streptococcal Glomerulo Nephritis

ART- Anti-retroviral treatment

AWD- Acute Watery Diarrhea

BMI -Body Mass Index

CBN- Community based nutrition

CDR- Crude Death Rate

CDC- Center for Disease Control and Prevention

CBR- Crude Birth Rate

CI- Confidence Interval

CMAM -Community Based Management of Acute Malnutrition

EDHS -Ethiopian Demographic and Health Survey

EFETP- Ethiopian Field Epidemiology training program

ENHS- Environmental health science

EOS- Enhanced outreach strategy

EPHI- Ethiopian Public Health Institute

EPI- Extended program on immunization

EPRP- Emergency Preparedness and Response Plan

FAO- Food and Agricultural Organization

GAM- Global Acute Malnutrition

GC- Gregorian Calendar

GDP -Gross Domestic Product

GR- Growth Rate

HC- Health Center

HDA- Health Development Army

HEP- Health Extension Program

HEW- Health Extension Worker

HIV- Human Immuno-Deficiency Virus

HMIS- Health Management Information System

IDSR- Integrated Disease Surveillance and Response

IMR- Infant Mortality Rate

IPD- In Patient Department

IRS- Indoor Residual Spray

ISS- Integrated Supportive Supervision

ITN- Insecticide Treated Net

LMIC -Low and Middle Income Countries

MAM -Moderate Acute Malnutrition

MCH- Maternal and child health

MDA- Mass Drug Administration

MDG- Millennium Development Goal

MMR- Maternal Mortality Rate

MUAC -Mid Upper Arm Circumference

NGO- Non Governmental Organization

NMR- Neonatal Mortality Rate

NNT- Neo-Natal Tetanus

NTS- Non Typhoidal Salmonella

OPD- Out Patient Department

OPV- Oral polio vaccine

OR- Odds Ratio

OTP -Outpatient Therapeutic Program

PHEM- Public Health Emergency Management

PLW- Pregnant and Lactating Women

RRT- Rapid Response Team

RUTF- Ready to Use Therapeutic Food

SAM -Severe Acute Malnutrition

SC- Stabilization Center

SD -Standard Deviation

SGA -Small for Gestational Age

SNNPR -Southern Nation Nationalities and People's Region

SUN -Scaling Up Nutrition

TSAP- Typhoid Surveillance in Africa Program

TSF- Targeted Supplementary Feeding

UNICEF- United Nation International Children Educational Fund

WFP -World Food Program

Wk- Week

Executive Summary

This document contains the whole outputs that are expected from an Ethiopian Field Epidemiology Training Program resident in the two years period. These outputs include reports of outbreak investigation, surveillance data analysis, evaluation of surveillance system, health profile description, scientific manuscript for peer reviewed journals, abstract for scientific presentation, narrative summary of disaster situation visited, proposal for epidemiologic study and others.

It is composed of nine chapters. Following chapter nine questionnaires and checklists have been annexed that were used as tools to accomplish field activities. Chapter one deals with two outbreak investigation reports-rubella outbreak investigation report in Chena district, Keffa zone and scabies outbreak investigation in Halaba special woreda. Chapter two explains findings of five year's (2011-2015) surveillance data analysis on malnutrition using surveillance database of regional public health emergency management core process. Chapter three addresses evaluation of typhoid fever surveillance system in Gedeo zone, SNNPR. Typhoid fever is one of weekly reportable disease under surveillance. Chapter four depicts health profile description report of kochere woreda, Gedeo zone. Chapter five and six mainly focus on communication that is abstract for scientific presentation and scientific manuscript for peer reviewed journals. These are derived from outputs already found in this body of work. Chapter seven, eight and nine elaborate narrative summary of disaster situation visited, proposal for epidemiologic research project and additional output (sample of weekly bulletin of surveillance), respectively. Epidemiologic research project is planned to be conducted in wonago district, Gedeo zone, SNNPR the place where highest population density have been observed. The area is also has problem of malnutrition as evidenced by weekly report of surveillance. Hence, this study will try to determine prevalence of malnutrition and factors associated with it focusing on the effectiveness of preventive nutrition interventions. Finally, annexes were added that have been used as a tool while field work was carried out.

Chapter 1: Outbreak/Epidemic Investigations

1.1 Investigation of scabies outbreak in Halaba special woreda, SNNPR, October/2016

1.1.1 Abstract

Background: Scabies is an allergic response to an infestation of the skin by the scabies mite. Lymphadenopathy, acute post-streptococcal glomerulonephritis and rheumatic fever are complications related with scabies due to secondary bacterial infection. World health organization listed the problem as one of the neglected tropical diseases. Regional health bureau was notified about the outbreak on September 24/2016. Investigation and control activities were started on October 13/2016.The aim of the investigation was to identify source, control the outbreak and assess risk factors associated with it.

Methods: We employed descriptive followed by unmatched case-control study design in a ratio of 1:2. Patients were recruited from temporary treatment sites. Controls were recruited from the nearby community by house to house visit and ensuring no scabies patient in the family. Additionally, line listing of cases was done to carry out descriptive analysis. Structured questionnaire was used to collect data.

Result:

Descriptive: The outbreak started in March and ended in October 2016. We line listed 1958 (males 1092 and females 866) patients with scabies. One thousand two hundred eighty eight (65%) were less than 15 years of age. Age ranged from 2 month to 84 years with median age of 12years. Overall attack rate was 4%. The outbreak affected 15 kebeles (Lowest government structure) from the total of 84.

Analytical: We enrolled 100 cases and 200 controls. History of contact with a patient of scabies ($P<0.00001$) and age less than 18 years ($P<0.0001$) were among risk factors associated with the outbreak.

Conclusion: Religious boarding school was implicated as a source of the outbreak. Community mobilized and outbreak controlled according to the guideline of scabies. We strongly recommend the regional health bureau to incorporate scabies surveillance in the integrated disease surveillance system of the region.

1.1.2 Introduction

September 23/2016 was the date that rumor about scabies outbreak was recognized by the core process of public health emergency management (PHEM) of Halaba special woreda from the community leaders as explained by the coordinator. The occurrence of scabies outbreak was notified to the region through phone call by the coordinator of PHEM in September 24/2016. Activities such as forming a team for outbreak investigation and response, communicating UNICEF for logistics and medication support, developing outbreak investigation questionnaire and mobilizing the resources to Halaba special woreda were carried out by the regional health bureau PHEM. After setting up aforementioned preparatory works, the regional team was deployed to the woreda in October 12/2016. Activities of public health interventions and outbreak investigation have started side to side in October 13/2016.

Scabies is an allergic response to an infestation of the skin by the mite Sarcoptes scabiei var hominis (1). The causative agent (Sarcoptes scabiei var hominis) is a round, eight legged, measures 0.3 x 0.35 mm on average and cannot be seen with the naked eye (2). This ancient disease of the skin has been existed for the past 2500 years causing a great deal of morbidity on mankind and currently affects 300 million people annually worldwide. It has been listed as neglected tropical disease by the World Health Organization (WHO) in 2013. Public and private sector expenditure on this problem, the lack of attention at local, national, and international levels, and the higher incidence of this infection amongst the poor are some of the reasons why WHO have considered the problem as one of neglected tropical diseases (3).

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. Once a site is selected, the mites use their mouths and legs to tear into the surface of the skin. Saliva-like substance is also secreted which aids in the burrowing process by dissolving the skin. When a burrow is complete, a female will lay 2-3 eggs in a burrow. This cycle is repeated many times during the two month life span of the fertile females. The larvae hatch from the eggs in 3-4 days. The larvae migrate to the surface of the skin within a day after hatching, dig a shallow burrow and feed on fluids contained in the skin cells. Over the next 3-4 days the outer skin layer of the larvae is shed (molted) and the mites develop into sexually immature nymphs (young adults). A final molt occurs 4-6 days later resulting in sexually mature male and female adult mites. The male mites have a very short life

span (1-2 days) which is spent seeking out unmated females. Although the pregnant female can lay up to three eggs per day during her two-month life span, fewer than 10% of the eggs live long enough to reach adult stage. Most of the eggs are removed from the skin during bathing or other actions such as scratching or rubbing of the skin (4).

Mode of transmission is through direct skin-to-skin contact, and 15–20 minutes of skin-to-skin contact is generally required. Overcrowding and sexual contact increases transmission. Sharing of clothing or bedding and towels can transmit the mite—especially if used immediately after the infested person. Asymptomatic patients, or patients with minimal symptoms, can unknowingly transmit mites. In contrast to typical scabies infestations, persons with crusted scabies are highly contagious because of the large number of mites, skin sloughing, and increased mite survival. With crusted scabies, there is a much higher risk of transmission of scabies from contaminated clothing, bedding, and towels. Close contacts and staff taking care of patients with crusted scabies are at higher risk of acquiring scabies than in the case of a typical scabies infestation.

Clinical manifestations of scabies depend on the form of scabies that is whether presentation is typical or atypical. In a typical form of scabies, pruritus develops after 2–6 weeks. Previously exposed patients develop pruritus within 24–48 hours of re-infestation. Lesions are symmetrically distributed on the hands (especially the interdigital spaces), wrists, elbows, waist, legs, and feet. In men, lesions are frequently around the belt line, thigh, and external genitalia. In women, they are often located on the areola, nipples, buttocks, and vulvar areas. Burrows can be observed at these sites; however, many patients will not have observable burrows. Burrows appear as 1–10 mm, flesh-colored to erythematous, wavy, raised, and threadlike lines on the skin surface. Excoriations are commonly found at these sites and may be the only clinical findings. Pruritus is worse at night and after a hot shower or bath. Lesions can become secondarily infected and present as pustules or cellulitis. Crusted Scabies**,** a subset of atypical form of scabies occurs in patients with severe disability or immunosuppression. Pruritus is not present or is a minor concern. The lesions are commonly found on the hands and extremities, but can be located anywhere on the body. Unlike a typical scabies infestation, crusted scabies can involve the face and scalp. The lesions are thickened, scaly crusts that may encompass a large body surface area. Due to the patient's decreased immunity, impaired sensation, and/or physical inability to scratch, the scabies mites number in the thousands (2).

Avoiding prolonged skin-to-skin contact with people who have conventional scabies and even brief skin-to-skin contact with people who have crusted scabies is the initial step among prevention strategies of scabies outbreak. Contact with items such as clothing and bed linens that have been used by an infected person should be avoided, especially if the person has crusted scabies (5).

The consequences associated with outbreak of scabies are not as easy as it seems to be in minds of many public health professionals and officials in particular as well as the public in general. The sequela of scabies predisposes affected children to sepsis and other non-suppurative invasive infections (*e.g.* lymphadenopathy, acute post-streptococcal glomerulonephritis (APSGN) and rheumatic fever) (6). Outbreaks of APSGN usually coincide with scabies outbreaks, which can contribute to the development of chronic kidney disease and subsequent renal failure in adulthood (7). Scabies infestation has a negative impact on the quality of life for infected individuals (similar to that of psoriasis) resulting in substantial stigmatization and ostracism (8). Since the usually affected age group of people is children of school age, the condition has a great influence in the academic performance of students because they cannot follow class room instructions attentively thinking their situation resulting from relentless itching caused by the disease. Therefore, the purpose of this outbreak investigation was to find out risk factors associated with the outbreak, to control the outbreak within short period of time before affecting large number of people and avail the result of the investigation to serve as a reference in the management of same outbreak for the future.

1.1.3 Objectives

General objective

To investigate scabies outbreak and implement public health interventions for the containment of the outbreak

Specific objectives

- To describe the characteristics of the outbreak in time, place and person
- To identify risk factors associated with scabies outbreak
- To control the outbreak using appropriate public health interventions
- To identify the source of scabies outbreak

1.1.4 Material and Methods

Study area

The outbreak investigation was conducted in Halaba special woreda- one of 15 zones and 4 special woredas in southern nation, nationalities & people's regional state (SNNPR) situated in the main road between Shashemene and Wolayta sodo. The woreda has 84 administrative kebeles (79 rural & 5 urban kebeles) with a total population of 318,177 of which the number of males and females is 155,907 and 162,270 respectively. The total number of health workers (all type except health extension workers-HEW) is 395. There are 142 rural & 8 urban HEWs totally 150. Concerning the number of health facilities, the woreda has 2 hospitals (1 general &1 primary), 9 health centers and 79 health posts with health service coverage of 95%.

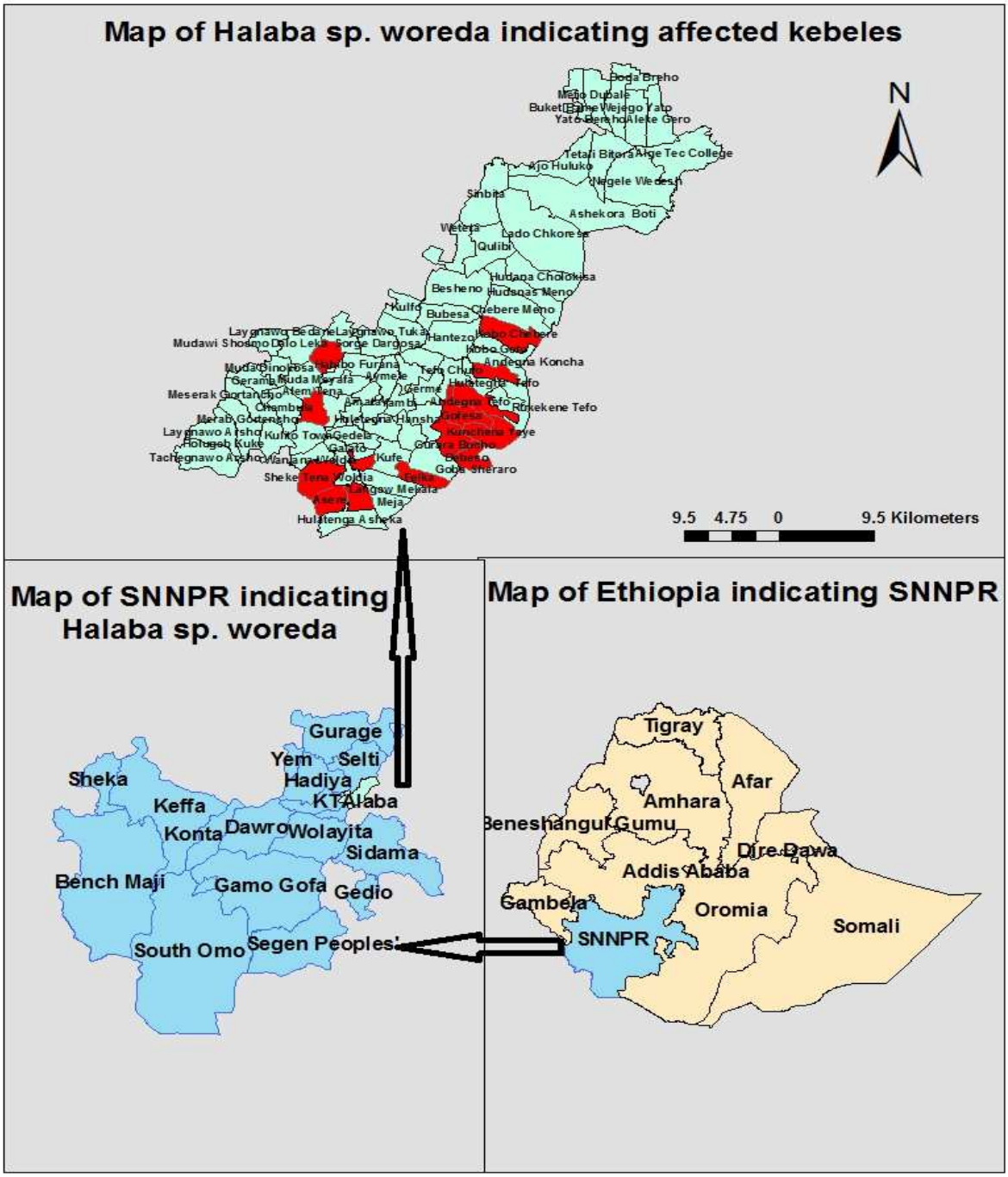

Figure 1: Map of Halaba special worda illustrating kebeles with scabies outbreak, 2016

Study design

Descriptive followed by unmatched case-control study design had been employed

Source population

All people living in the kebeles affected by outbreak of scabies

Study population

Patients with active infestation by scabies and their controls living in the same area of residence as case patients but, who are not family members of case patients are targeted as study population.

Eligibility criteria

Cases: Patients who fulfil the standard case definition of scabies and with the disease onset of 2 weeks prior to the date of data collection were included in the study.

Controls: Individuals who reside in the neighborhood of cases and do not have signs and symptoms scabies.

Standard case definition of scabies

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

Sample size determination

The sample size was determined using Epi info version 7 software by taking the following assumptions:-

Confidence interval =95%, Power =85%, Percent of controls exposed = 15%, Odds ratio =2.53

Percent of cases exposed =30.9%. Then the final sample size was 100 cases and 200 controls = 300 study participants.

Sampling technique

Non-probability convenience sampling technique was used in a ratio of 1:2 cases and controls. Selection had two dimensions. First, we selected three kebeles where the outbreak had started early and with high number of cases. Then patients were selected and interviewed at temporary

treatment sites (mainly health posts) by ascertaining the eligibility criteria mentioned above. Finally, controls were selected from villages where cases come from.

Data collection method

Structured questionnaire was used in the process of data collection which had contents of socio demographic information, clinical features of the disease and risk factors. The total number of sample was divided in to five data collectors and daily target was set that is interviewing 15 participants by one interviewer each day. There were two locations where patients with scabies and their controls were selected and interviewed. One is temporary treatment sites where mass drug administration (MDA) was conducted and another is the villages where controls selected and interviewed by trained data collectors house to house. First, data collectors interviewed patients with scabies at treatment sites. Then, having address and other information of personal variables like age and sex of interviewee they had searched for appropriate controls in the villages where the patients come from. Controls were neighbors of case patients having more or less the same characteristics as that of cases but, without the disease. The data collectors not only interview the controls but also observe whether the interviewee is free of the disease under investigation or not.

In search of identifying the source of outbreak we had interviewed five key informants and visited a mosque to observe students of holly 'kuran'.

Operational definition

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

Large Family: A family which has six or more family members in a household

Data analysis

Data was entered and analyzed by Epi-info 7 and Excel 2010 soft wares. First we carried out bivariate analysis and calculated crude odds ratio, confidence interval and p-values. Then, multi variate analysis was done using multiple logistic regression.

Data quality management

To ensure the quality of data five health workers who have educational level of diploma and above were selected from health centers. Training was given about data collection instrument and the characteristics of epidemiologic study design (case-control) that we were going to implement. Throughout the period of data collection (October 15-18/2016) daily follow up and evaluation of data collection process was done.

Ethical consideration

In order to keep dignity of the participants, information indicating the identity of study subjects like name of interviewee is excluded from the questionnaire.

1.1.5 Results

Descriptive findings

A total of 1958 (1092 males and 866 females) cases of scabies have been line listed and descriptively analyzed based on the date of disease onset starting from January 07/2016 up to October 01/2016 referring data obtained from 15 kebeles that were heavily affected by outbreak of scabies. Even though total number of people infested by scabies mites exceeds 30, 000, after October 01/2016, cases were not line listed but, only information about total number of cases was updated each day for the purpose of monitoring public health intervention activities and logistics issues. Males were more affected than females (males 55.7% and females 44.3%). Regarding to age group, people who are less than 15 years of age account 65% (1288 in number) of the disease burden. Age ranged from 2 months to 84 years but, the median age was 12. The interquartile range was 7.75 and 20.75 that is 50% of cases were between the age of 8 and 21 years.

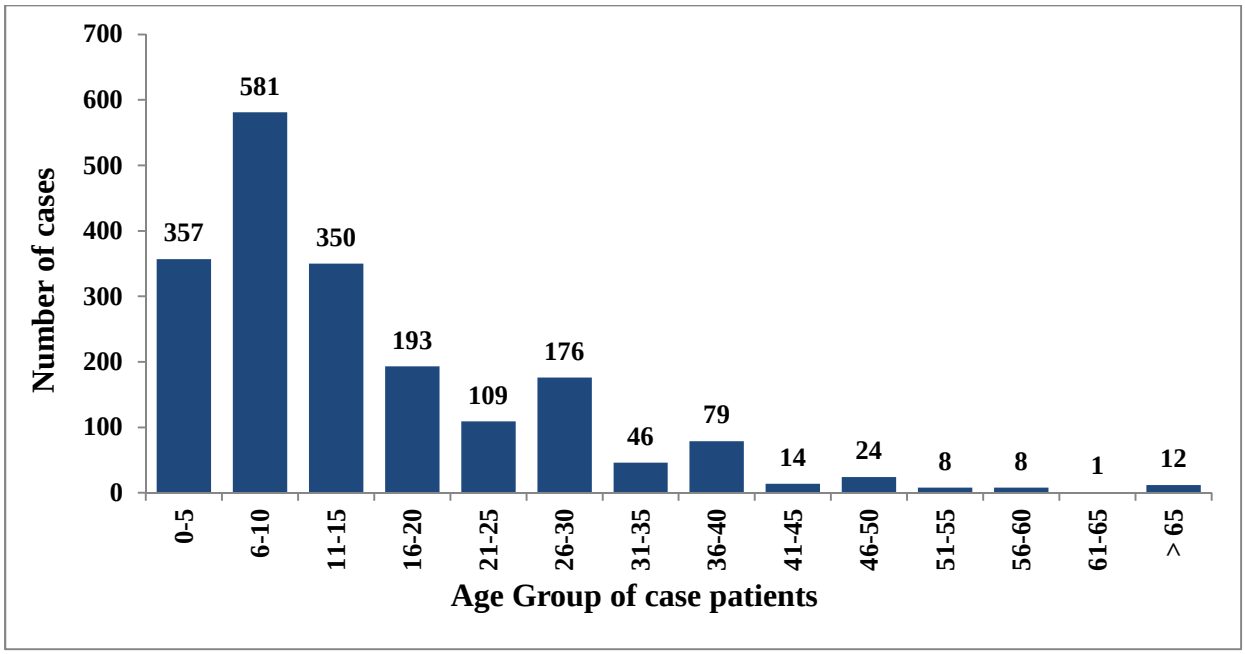

Figure 2: Distribution of cases of scabies by age group, Halaba special woreda, October 2016

The overall attack rate for the 15 kebeles included in the line list is 4% which ranges from Kunche yeye kebele with the highest attack rate (17.9%) to Kobo chobare (0.3%) with the lowest attack rate.

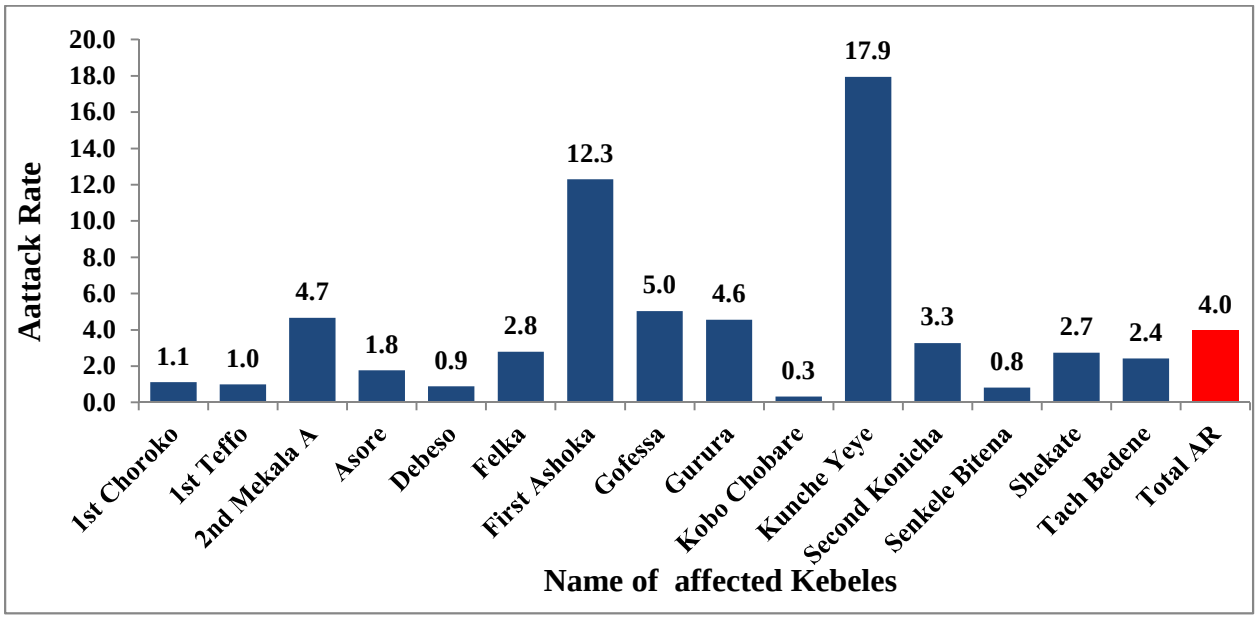

Figure 3: Attack rate of kebeles affected by scabies outbreak, Halaba special woreda, October 2016

When we compare the actual number of cases with that of corresponding attack rate of each kebele the order of rank doesn't change because there is no significant variation in the total number of population of the kebeles.

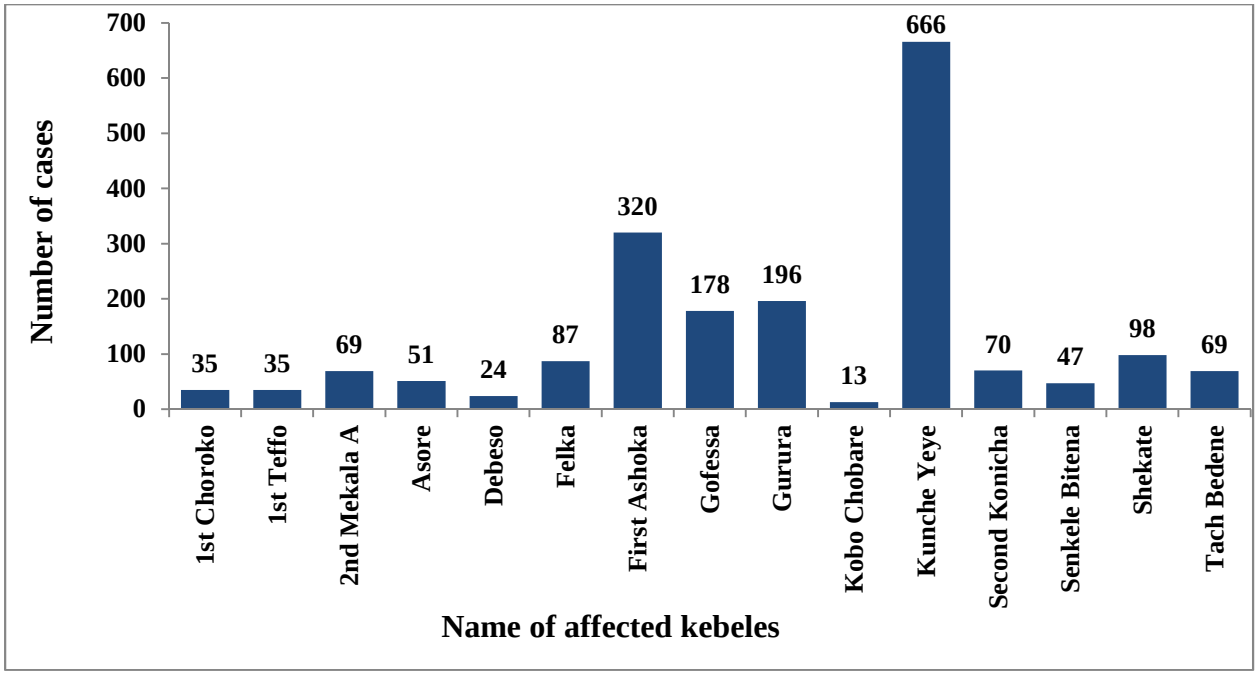

Figure 4: Distribution of cases of scabies by affected kebeles, Halaba special woreda, October 2016

The epidemiologic curve illustrated below shows number of cases with different peaks and falls over the period of more than 8 months. The outbreak had reached its highest peak in the epidemiologic week of 35 roughly in middle of August and in the beginning of September.

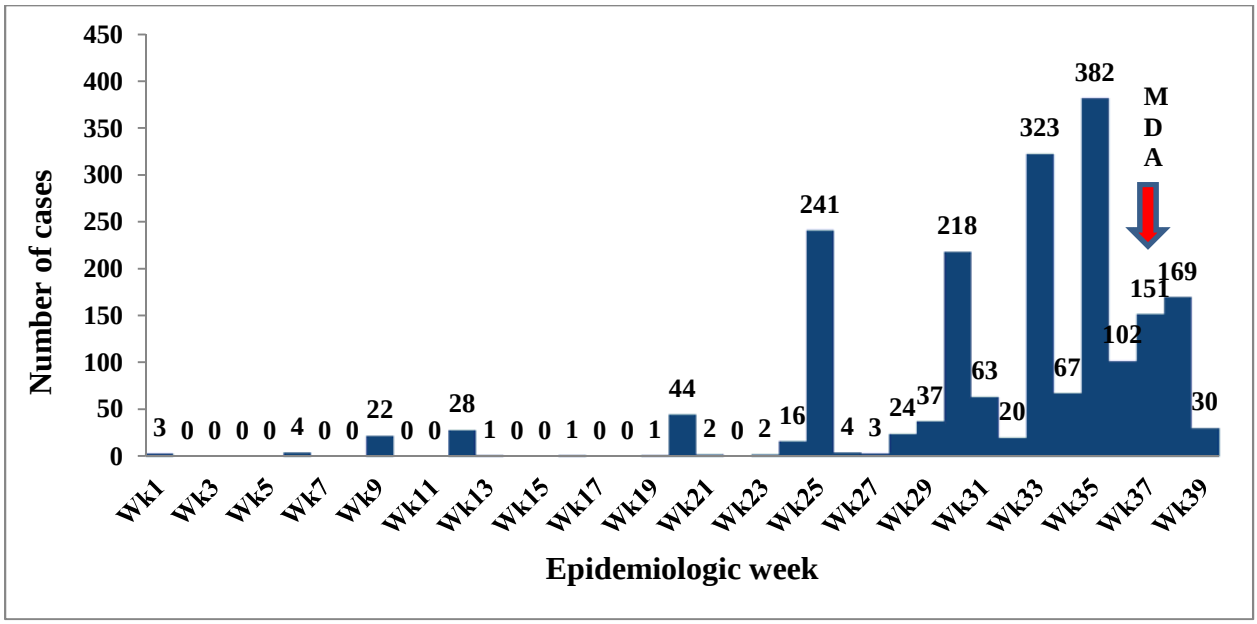

Figure 5: Epidemic curve showing trend of cases based on epidemiologic week, Halaba special woreda, Oct/2016

Analytical study

We conducted unmatched case control study design. 100 cases and 200 controls were selected in a ratio of 1:2. Case of scabies was defined as any person who has consistent sign and symptoms of scabies particularly distribution of rash over the patient's body and intense itching during the night. Controls were defined as any person who has similar characteristics as that of cases except absence of the disease. Among the study participants females were 105 and males were 195. The median age was 15 with interquartile range of 9 and 29 years.

Table 1: Cases and controls by sociodemographic and other characteristics, Halaba, SNNPR, 2016

S/n	Variable	Case		Control	
		Number	%	Number	%
1	**Sex**				
	Male	64	64	131	65.5
	Female	36	36	69	34.5
2	**Age group**				
	0 - <10	34	34	45	22.5
	10 - <20	35	35	60	30
	20 - <30	17	17	49	24.5
	30 - <40	9	9	31	15.5
	40 - <50	2	2	11	5.5
	50 - <60	1	1	4	2
	60 - <70	2	2	0	0
3	**Occupation**				
	Farmer	51	51	75	37.5
	Merchant	2	2	3	1.5
	Unemployed	6	6	11	5.5
	Employed	0	0	1	0.5
	Student	41	41	110	55
4	**Educational level**				
	Illiterate	41	41	105	52.5
	Primary	53	53	77	38.5
	Secondary	5	5	18	9
	Tertiary	1	1	0	0
5	**Sharing of cloth**				
	Yes	44	44	27	13.5
	No	56	56	173	86.5
6	**Skin contact**				
	Yes	68	68	23	11.5
	No	32	38	177	88.5
7	**Living in a flood affected area**				
	Yes	93	93	142	71
	No	7	7	58	29
8	**Usage of soap**				
	Yes	82	82	192	96

	No	18	12	8	4
9	**Large family (>6 members)**				
	Yes	68	68	133	66.5
	No	32	32	67	33.5

Among the risk factors analyzed using bi-variate analysis, history of skin to skin contact with a patient of scabies OR= 16.35, 95% CI (8.93 - 29.92); sharing clothes with patient of scabies OR= 5.03, CI (2.85 – 8.86); living in a flood affected area OR=5.42, CI (2.37 – 12.40) and People less than 18 years of age OR= 2.05, CI (1.23 – 3.40) have statistically significant association with the occurrence of the outbreak. Having large family size (more than 6 members in a family) OR= 1.07, CI (0.64 – 1.78) and being male OR= 0.93, CI (0.56 – 1.54) have no statistically significant association. However, use of soap OR=0.18, CI (0.07 - 0.45) has statistically significant association which is protective.

All the variables which have statistically significant association in bi-variate analysis have also the same association in multi-variate analysis. See logistic regression table below.

Table 2: Result of multi- variate analysis, Halaba Special Woreda, SNNPR, Oct/2016

S/n	Variables	Case				Control				COR	AOR	95% CI	P-Value
		Yes	%	No	%	Yes	%	No	%				
1	Male	64	64	36	36	131	65.5	69	34.5	0.93	1.24	0.55-2.78	0.5999
2	Age < 18 years	69	69	31	31	104	52	96	48	2.05	14.7*	4.91-44.31	0.0001
3	Skin to skin contact	68	68	32	32	23	11.5	177	88.5	16.35	23.9*	10.25-55.96	0.0001
4	Sharing of clothes	44	44	56	56	27	13.5	173	86.5	5.03	4.29*	1.87-9.86	0.0006
5	Living in a flood affected area	93	93	7	7	142	71	58	29	5.42	7.40*	2.37-23.08	0.0006
6	Usage of soap	82	82	18	18	192	96	8	4	0.18	0.07*	0.02-0.26	0.0001
7	Family size (> 6)	68	68	32	32	192	66.5	8	33.5	1.07	0.84	0.36-1.94	0.6968

Note: figures with asterisk show statistically significant association

Findings from key informant interview

We had interviewed five key informants. Three were kebele administrators from highly affected kebeles, one leader of Islamic religion and one health extension worker. They said that they had never seen such outbreak in their life time even though very few cases of scabies were usually existed in some parts of the woreda. As explained by the key informants the cases of scabies had started to show up after the return of students of religious teaching from Bale zone, Oromia regional state where a number of Muslims who live in Halaba went to attend 3 to 4 year's training. After getting this information we had visited one of the mosques which had religious boarding school in it. At the time of visit there were 39 students. Among them 29 (74%) were found to be patients of scabies.

Public health interventions

Training was given for health extension workers, health professionals and coordinators of public health interventions about scabies outbreak prevention & control guideline, treatment of scabies and mass drug administration (MDA) campaign. In addition to treating cases & contacts in less affected kebeles, Kebeles with greater than 15% attack rate were identified and MDA has been conducted in those selected kebeles. Regarding social mobilization & awareness creation of the public, key issues of intervention like what to do before taking scabicidal medication, how to apply permethrin cream over their body, the importance of treating all contacts of scabies patients and the need for avoiding contact with a person infested by scabies mites were some of the information addressed to the community. Schools, mosques, market places and any mass gatherings were used as a medium to transmit the aforementioned health information. Pertaining to surveillance and contact tracing, the existing system of active surveillance has been revitalized and a system for daily update of cases was established throughout kebeles in the woreda.

1.1.6 Discussion

The number of scabies cases was unacceptably high because of delayed notification of outbreak and reporting of cases even by public health system structured in such a way it enables health officers to identify any health related events at grass root level through the health extension program. The long duration of the outbreak indicates weakness of the public health surveillance system of the woreda as evidenced by very late notification of the outbreak. People in the age group of 6 up to 15 years were more affected than any age group in the continuum. This may be

most of them were students of primary school where the chance of infestation with scabies mites is very high through direct skin to skin contact. Concerning to schools there is one important risk factor peculiar to the community of the woreda that is school of religious teaching in the mosques called 'Deressa'. Students are adolescents who were recruited to study the holly book (Kuran) living in a group in the houses specially built for this purpose inside the compound of mosques. When we had visited some of the mosques, we were able to observe higher proportion of students who were cases of scabies. In the study conducted in Doga-temben district, Tigray regional state, the most affected age group was found to be children less than 5 years of age (9). Our study has revealed that males are more affected than females (56%) even though it has no statistically significant association. In contrast to this, in a study conducted in Patients Visiting Liaquat University Hospital of Pakistan, scabies was more frequent in females (54%) with non-statistically significant association (10)

The epi curve was created by taking epidemiologic week as time factor because it was very difficult to show trend of the outbreak using specific date of disease onset since the outbreak had long duration and if constructed by using date of disease onset, it won't be easily understandable. The characteristics of the epi curve is consistent with the mode of transmission of scabies mites that is, person to person through direct skin to skin contact having multiple peaks & falls. Number of cases starting from epi week 1 up to 24 may not reflect the actual situation of the outbreak at that time since there was no recording and active searching of cases. Retrospectively asking the patient about date of disease onset, line listing of cases was started in September/2016- the time when situation of the outbreak come in to attention of woreda health office after community leaders reported the occurrence of unusually increasing number of skin rash and itching in the community. Consequently, respondents may introduce recall bias in stating the exact date of disease onset due to long duration of the outbreak.

Although the study have showed that there are many risk factors associated with the outbreak educational level of study participants has no statistically significant association to imply as a determinant factor. The reason can be people living in the study area were homogeneous with regard to educational level-mostly illiterate and primary level. Hence, case and control groups were selected from this homogeneous population. Additionally, having large family size (greater than 6 members in a household) is not a risk factor. This may be justified by the fact that most of

the houses in the community were built in proportion to the family size. During house to house visit the total area of the house was observed and determined in a meter square. Consequently, the larger the family size the wider would be the area of the house.

Study Limitations

It is known that study findings based on purposive sampling technique may not reflect the situation of the disease in the general population. Hence, generalization is difficult based on the result of this outbreak investigation. Furthermore, it was very hard to ascertain the index case for the reason that the outbreak was wide spread in the community and had very long duration (more than eight months) without undertaking control measures due to delayed notification and reporting of cases. This has its own implication in the determination of what caused the outbreak.

1.1.7 Conclusions

This investigation had revealed wide spread outbreak of scabies in Halaba special woreda, SNNPR. We have identified late outbreak notification by woreda health structure. Contact with a person who had been infested with scabies mites in association with other factors (sharing clothes with patient of scabies, age < 18 years and living in a flood affected area) were factors associated with the outbreak. Students of boarding schools of Islamic religion ('Deresa') had been implicated as source of outbreak by the investigation team.

1.1.8 Recommendations

- Surveillance of scabies should be incorporated in the system of integrated disease surveillance & response (IDSR) as one of weekly reportable diseases.
- Leaders in all levels of the health system in the region as well as working in related sectors should give due emphasis for the coordination of prevention and control activities of scabies outbreak.
- The woreda health office should focus on improving public health interventions concerning hygiene and sanitation in religious schools in particular and academic schools in general.
- Notification of outbreak and reporting of cases of scabies should be in a timely and organized manner. In order to strengthen flow of information, revitalizing the already

established system of reporting specially at the community and health post level is mandatory.

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1.2 Rubella outbreak investigation Chena district, Keffa zone, SNNPR, March/2016

1.2.1 Abstract

Background: Rubella is one of vaccine preventable viral diseases. The term rubella is derived from Latin word, meaning "little red". In 2012, World Health Organization estimated that a minimum of 100,000 cases of Congenital Rubella Syndrome (CRS) occur annually worldwide, which makes rubella a leading cause of preventable congenital defects. The CRS burden is highest in South East Asia and African regions. In most African countries including Ethiopia burden of CRS is not known. The best therapy for CRS is prevention. The first live attenuated rubella vaccine was introduced in 1969 which has greater than 95% of efficacy. However, Ethiopia did not include the vaccine in expanded program on immunization yet. The aim of the investigation was to describe the outbreak in time, place and person.

Methods: Descriptive cross sectional study was employed. Variables like age, address and sex of all case patients were collected using standard line listing format of Ethiopian public health institute. Active search of case patients of rubella was also conducted house to house by health extension workers. Data was entered into and analyzed using Microsoft excel version 2010. Cases were confirmed by regional public health laboratory of SNNPR.

Result: The total number of rubella cases was 90 (51 males and 39 females). The outbreak was started and ended on February 22/2016 and March 5/2016, respectively. Two kebeles were affected by the outbreak namely, Boba gota and Gida. Males are slightly more affected than females. Age of case patients ranges from 4 months to 9 years. Regarding to age group, children who are between the age of 1 and 4 years, account 60% of cases that have occurred during the period of outbreak.

Conclusion: Males and children in the age group of 1-4 years were more affected than any age by the outbreak. The investigation has triggered the need for further study that can answer why the outbreak has occurred in non-adjacent kebeles with no history of travel and lasted in a brief duration (12 days) without intervention. We recommend seroprevalence study of rubella specific antibodies in women of reproductive age group to ascertain risk of congenital rubella syndrome.

1.2.2 Introduction

The name rubella is derived from Latin, meaning "little red." Rubella was initially considered to be a variant of measles or scarlet fever and was called "third disease". It was in the 1814 that it was first described as a separate disease in the German medical literature, hence the common name "German measles". World Health Organization (WHO) report of 2012 revealed that a minimum of 100,000 cases of Congenital Rubella Syndrome (CRS) occur annually worldwide, which makes rubella a leading cause of preventable congenital defects. CRS mainly includes Deafness, Eye defects, Cardiac defects, Microcephaly, Mental retardation, Bone alterations and Liver and spleen damage. Rubella outbreaks are almost always followed by an increase in CRS (1). The CRS burden is highest in South East Asia (approximately 48%) and African regions (approximately 38%) (2).

Before the availability of rubella vaccines in the United States, rubella was a common disease that occurred primarily among young children. The last major epidemic in the United States occurred during 1964–1965, when there was an estimated 12.5 million rubella cases, resulting in 2,000 cases of encephalitis, 11,250 therapeutic or spontaneous abortions, 2,100 neonatal deaths, and 20,000 infants born with CRS (3). The estimated cost of the epidemic was $840 million (1).

Fetal infection is acquired hematogenously, and the rate of transmission varies with the gestational age at which maternal infection occurs. After infecting the placenta, the rubella virus spreads through the vascular system of the developing fetus, causing cytopathic damage to blood vessels and ischemia in developing organs. When maternal infection/exposure occurs in the first trimester, fetal infection rates are near 80%, dropping to 25% in the late second trimester and increasing again in the third trimester from 35% at 27–30 weeks' gestation to nearly 100% beyond 36 weeks' gestation. The risk of congenital defects has been reported to be 90% when maternal infection occurs before 11 weeks of gestation, 33% at 11–12 weeks, 11% at 13–14 weeks, 24% at 15–16 weeks, and 0% after 16 weeks. Therefore, the risk of congenital defects after maternal infection is essentially limited to the first 16 weeks of gestation. Little, if any, risk of CRS is associated with infection beyond 20 weeks, and Fetal Growth Restriction (FGR) seems to be the only sequela of third trimester infection. Periconceptual maternal infection does not seem to increase the risk of CRS. Maternal immunity, either after vaccination or naturally derived, is generally protective against intrauterine rubella infection. However, there have been

cases of CRS after maternal reinfection. Therefore, CRS should always be considered in a fetus or neonate with a clinical picture suggestive of congenital infection. It should be noted that no case of CRS has been reported when maternal reinfection occurred after 12 weeks of pregnancy. Although rubella is asymptomatic in 25% to 50% of cases, the infectious period is from 7 days before to 5–7 days after rash onset (4).

The incubation period of rubella is 14 days, with a range of 12 to 23 days. Symptoms are often mild, in children, rash is usually the first manifestation and a prodrome is rare. In older children and adults, there is often a 1 to 5 day prodrome with low-grade fever, malaise, lymphadenopathy, and upper respiratory symptoms preceding the rash. The rash of rubella is maculopapular and occurs 14 to 17 days after exposure. The rash usually occurs initially on the face and then progresses from head to foot. It lasts about 3 days and is occasionally pruritic. The rash is fainter than measles rash and does not coalesce. The rash is often more prominent after a hot shower or bath. Lymphadenopathy may begin a week before the rash and last several weeks. Posterior auricular, posterior cervical and sub occipital nodes are commonly involved (1).

There are occasions when outbreaks of rubella and measles have occurred simultaneously. Infants with CRS and Congenital Rubella Infection (CRI) shed rubella virus for long periods (60% for the first 4 months of life) and appropriate infection control measures should be applied. It is particularly important that pregnant women who are not rubella-immune should not be exposed to infants with CRS and CRI (5).

Rubella is only moderately contagious. Persons with rubella are most infectious when rash is erupting, but they can shed virus from 7 days before to 7 days after rash onset. Infants with CRS shed large quantities of virus from body secretions for up to 1 year and can therefore transmit rubella to persons caring for them who are susceptible to the disease (4, 3). Rubella is transmitted through direct or droplet contact from nasopharyngeal secretions. Any direct contact with a patient with rubella during the infectious period (7 days before to 7 days after rash onset) is defined as an exposure (3).

The first live attenuated rubella vaccine was introduced in 1969. A single dose of this vaccine will result in measurable antibody in almost 95% of susceptible persons. Antibody levels persist for at least 18 years in more than 90% of the vaccine recipients. Primary failure of the rubella

vaccine occurs in less than 5% of immunizations. The best therapy for CRS is prevention. All girls should be vaccinated against rubella before entering the child-bearing years (4). WHO has recommended for all countries that are providing two doses of measles vaccine and have not introduced rubella vaccine, to consider including rubella-containing vaccine in their immunization program (3).

1.2.3 Objectives

General

To investigate rubella outbreak and to implement control measures in Chena district kaffa zone, SNNPR

Specific

- To describe the characteristics of the outbreak in time, place and person
- To identify the etiologic agent responsible for the outbreak

1.2.4 Methods

Study area and population

Chena is the largest and populous district of 11 districts which are found in kaffa zone, SNNPR. It has 44 kebeles including Wacha and Shishinda (urban kebeles). The district borders with Gewata district in the north, Decha district in the east, Bench maji zone in the south and Bita district in the west. The projected population of the district in the year of 2008EC was 205,978 of which number of males is 101,568 and females are 104,410. The district has one primary hospital, 6 health centers and 42 health posts on the government side and 16 health facilities on the private health sector side established to deliver health services to the community. The total number of health professionals (all type) working in the district is 116. 65 health extension workers are assigned in the 42 health posts to fulfil promotive and preventive health needs of the rural community. The health service coverage of the district is 94%.

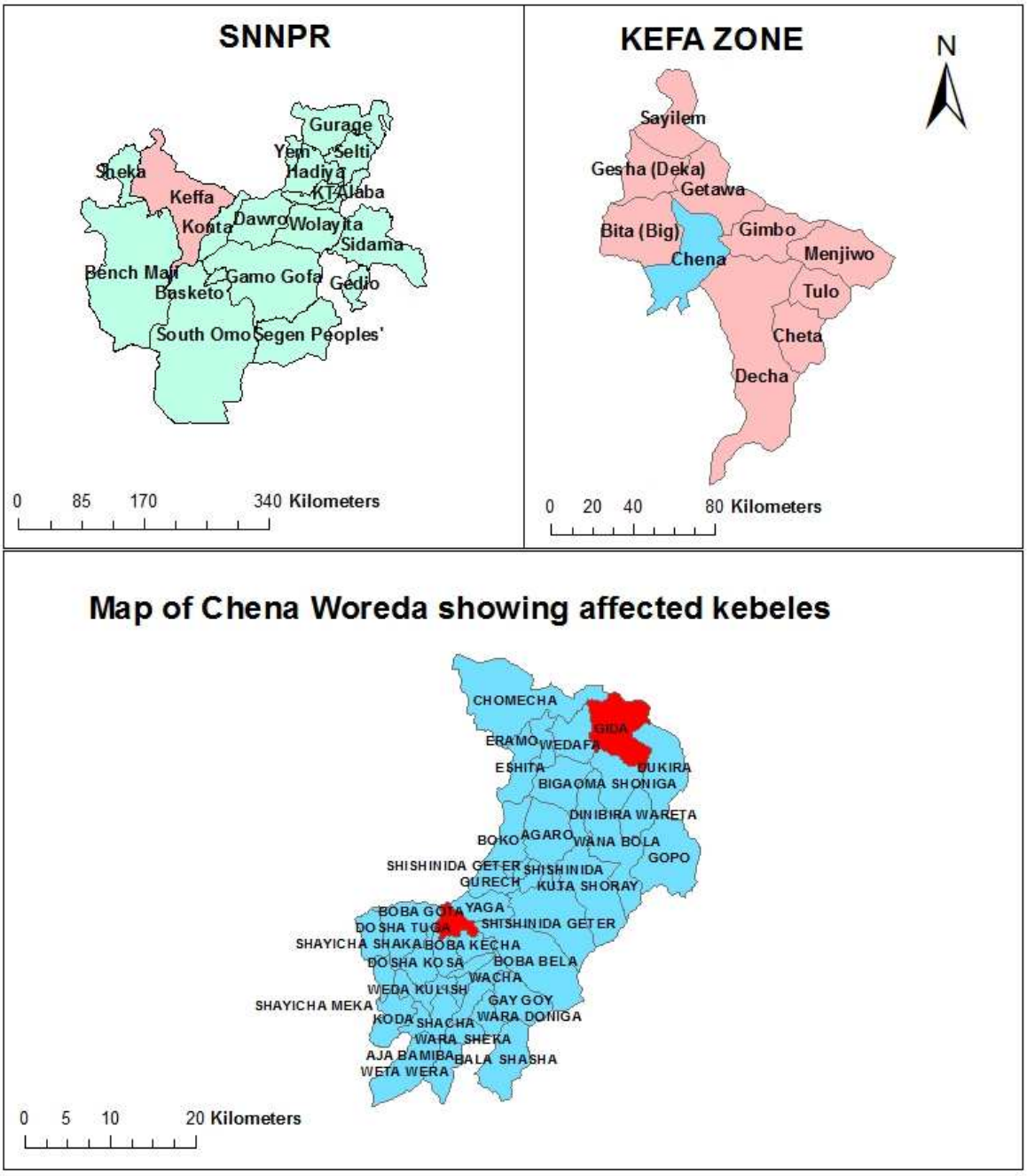

Figure 6: Map of Chena district shows kebeles affected by outbreak of rubella, Chena district, Oct/2016

Study design

Descriptive cross sectional study design have been employed to determine distribution of rubella cases based on time, place and person variables.

Data collection and analysis

Variables such as age, sex and address of all case patients were collected using standard line listing format of Ethiopian public health institute. Additionally, active search of case patients of rubella was conducted house to house by health extension workers in kebeles where the outbreak had occurred. Data was entered into and analyzed using Microsoft excel version 2010.

Confirmation of cases

Five samples of blood were taken from five case patients of rubella and testing was done by regional public health laboratory of SNNPR. Two out of five samples were positive for rubella specific IgM after having done testing for measles which was all samples were negative for measles.

Case Definition

Suspected: Any generalized rash illness of acute onset that does not meet the criteria for probable or confirmed rubella or any other illness.

Probable: Acute onset of generalized maculopapular rash; and temperature greater than 37.2° C and arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and lack of epidemiologic linkage to a laboratory-confirmed case of rubella; and noncontributory or no serologic or virologic testing.

Confirmed: A case with or without symptoms who has laboratory evidence of rubella infection confirmed by one or more of the following:

isolation of rubella virus; or detection of rubella-virus specific nucleic acid by polymerase chain reaction; or significant rise between acute-and convalescent-phase titers in serum rubella immunoglobulin G antibody level by any standard serologic assay; or positive serologic test for rubella immunoglobulin M (IgM) antibody

OR

acute onset of generalized maculopapular rash; and temperature greater than 99.0° F or 37.2° C; and arthralgia, arthritis, lymphadenopathy, or conjunctivitis; and epidemiologic linkage to a laboratory-confirmed case of rubella.

Clinically confirmed CRS is an infant with two of the complications described in (a) below or with one of those in (a) and one in (b).

(a) Cataract(s), congenital glaucoma, congenital heart disease, loss of hearing, pigmentary retinopathy.

(b) Purpura, splenomegaly, microcephaly, mental retardation, meningoencephalitis, radiolucent bone disease, onset of jaundice within 24 hours after birth.

1.2.5 Result

In the period of 12 days totally there were 90 cases (51 males and 39 females) of rubella in two kebeles. All case patients of rubella are line listed and analyzed descriptively. The outbreak was started and ended on February 22/2016 and March 5/2016, respectively. Two kebeles were affected by the outbreak namely, Boba gota and Gida. Number of cases is greater in Boba gota than Gida (54 vs 36) kebele. Males are slightly more affected than females. Age of case patients ranges from 4 months to 9 years. Regarding to age group, children who are between the age of 1 and 4 years, account 60% of cases that have occurred during the period of outbreak. Median age was 1 year with interquartile range of 0.83 and 3.25 that is 50% of cases were between the age of 10 months and 3 years.

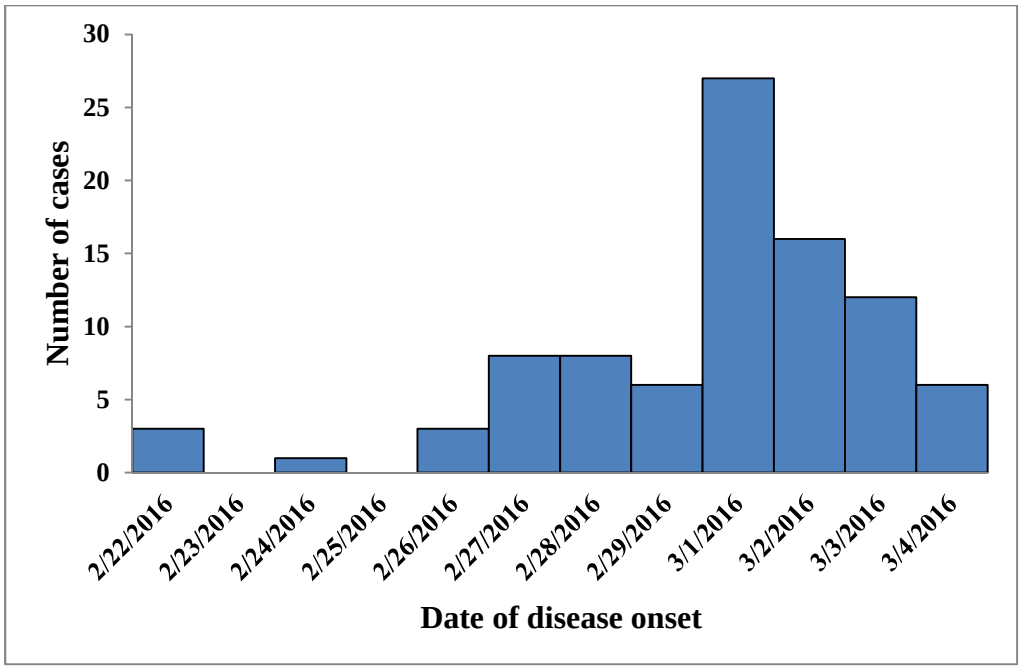

Figure 7: Epidemiologic curve shows distribution of cases based on date of disease onset, Chena district, 2016

The above epidemic curve shows that high number of cases was occurred on March 1/2016 and there were no cases on February 23 and 25/2016. The epidemic had a brief duration that lasted only 12 days. No cases were found after March 5/2016 despite strong active search of cases visiting house to house in the community.

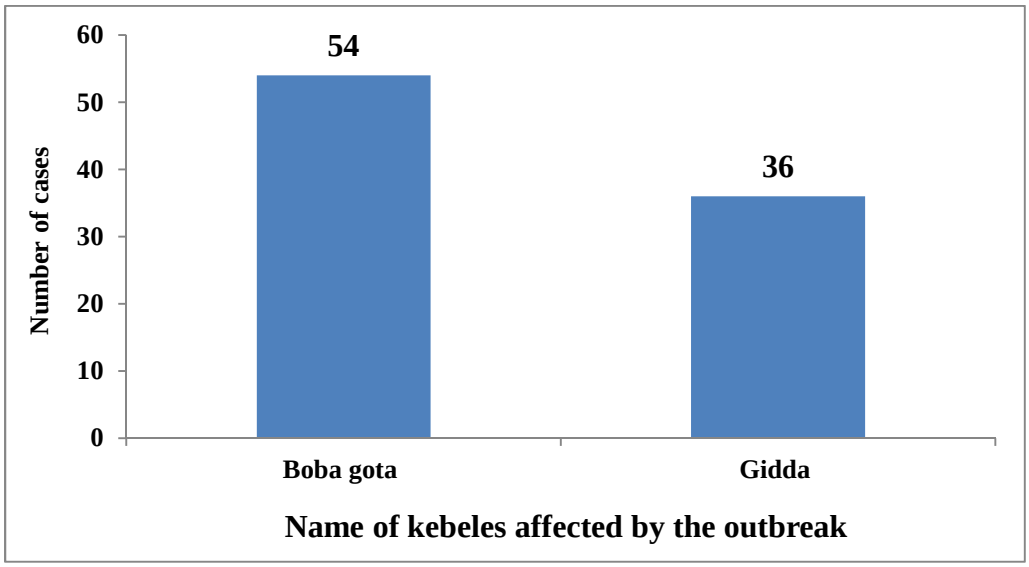

Figure 8: Distribution of cases by place Chena district, March/2016

The above figure shows the distribution of cases by place that is kebeles. When we calculate the attack rate of each kebele, the attack rate of Boba gota kebele is higher than that of Gida kebele (Boba gota 1.44% and Gida 0.81%). These kebeles are not adjacent but, they may have different source of infection from their respective neighboring districts.

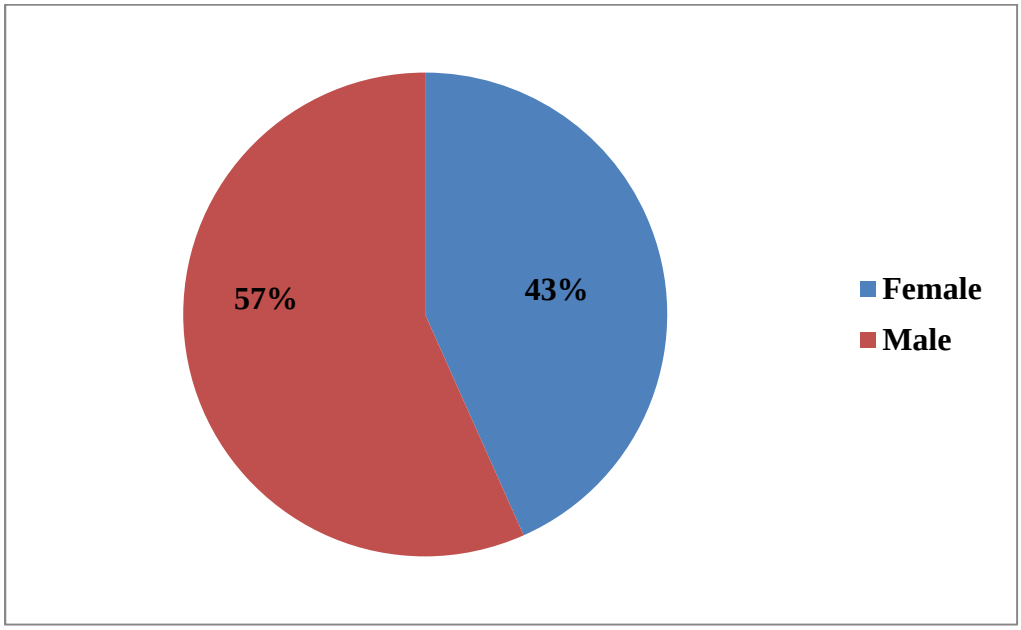

Figure 9: Distribution of cases by sex, Chena district, March/2016

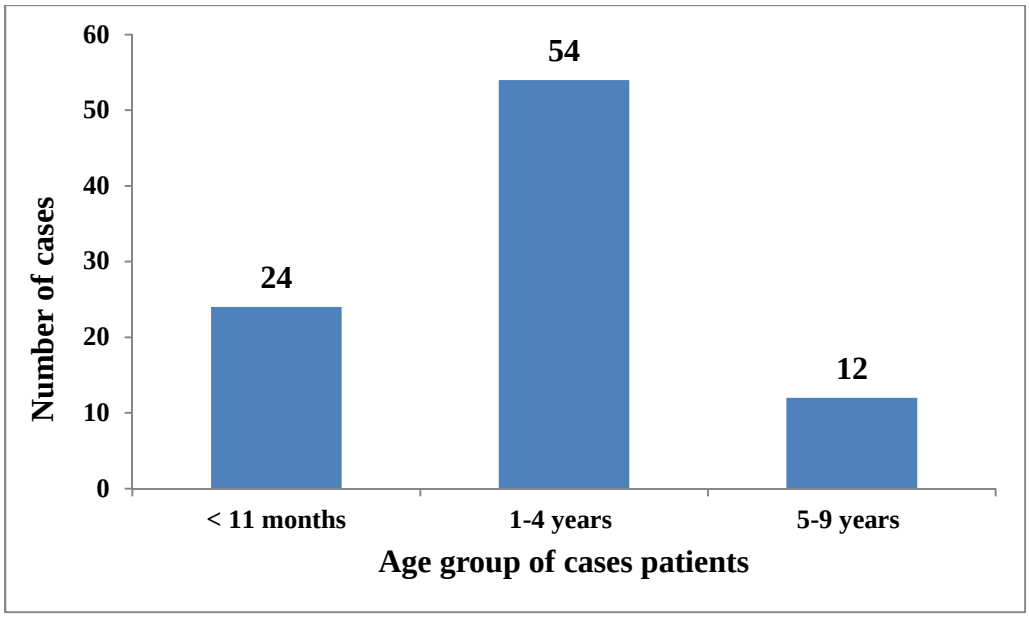

Figure 10: Distribution of cases by age group of case patients, Chena district, March/2016

Children in the age group of 1-4 years are the most affected followed by infants. Interestingly the outbreak was limited to ages between 4 months and 9 years. There were no case patients whose ages are beyond 9 years.

1.2.6 Discussion

Outbreaks of rubella occur with a certain periodicity averaging 7 years in urban areas. Sub-Saharan Africa remains a problem, both for epidemiological and economic reasons. The incidence of CRS is poorly documented, except for data from Ghana and South Africa (6). In Ethiopia as well we couldn't find data describing about frequency of rubella epidemic and the incidence of CRS. In countries where Measles, Mumps and Rubella (MMR) vaccination had been included in their expanded program on immunization (EPI) reported cases were concentrated in adults than children. However, before the introduction of rubella containing vaccine the most affected age group in these countries was more or less similar with our study that is children less than 15 years of age. This shows that the more adults not immunized the greater is the risk to be susceptible to rubella infection. If women in the child bearing age are affected, rubella infection will be transmitted to the fetus and then end up with CRS that have a devastating health outcome in infants born to rubella infected mothers during pregnancy especially at first trimester.

The rubella vaccine is a live attenuated strain that has been in use for more than 40 years. A single dose gives more than 95% long-lasting immunity, which is similar to that induced by natural infection (7). This vaccine is not yet included in national expanded program on immunization neither as monovalent nor MMR vaccine in Ethiopia.

Globally, in 2015, among the 160 countries that reported case-based surveillance data, 160,644 serum specimens were received. Of these specimens, 146,925 (91%) were tested for measles IgM (45,674 [31%] positive), and 112,461 (70%) were also tested for rubella IgM (13,601 [12%] positive) (8). Similarly in our region SNNPR in 2016 within 7 month duration 309 serum specimen received and 95 (31%) were positive for measles. However, the proportion of rubella positive samples were higher compared to the global that is, among 208 measles negative samples, 37 (18.4%) were rubella positive (9). WHO has developed Global Vaccine Action Plan (GVAP) with the objective to eliminate measles and rubella in five World Health Organization (WHO) regions by 2020. Countries in all six WHO regions had established measles elimination

goals, and additional goals for elimination of rubella and congenital rubella syndrome in three regions (8). Ethiopia, as a member state, is not in a position to achieve the goal especially with regard to elimination of rubella and rubella congenital syndrome.

Limitation of the study

The study is descriptive only. Before going out for field work from regional health bureau, we had received reports of confirmed measles outbreak in different parts of the region. In kaffa zone also there were confirmed measles outbreak for example in Tello, Cheta and other districts. Hence we assumed that the outbreak in Chena district would be due to measles too. While the collected blood sample transported to regional laboratory, we went out for field work after hastily designing a questionnaire for measles outbreak investigation- considering the urge imposed upon us from higher officials to control the outbreak early. However, in the field, after data collectors had been trained and on the last day of data collection we informed from regional public health laboratory that the test result was positive for rubella. That was the reason behind not to do analytical study that would have great importance in identifying risk factors related with the outbreak.

1.2.6 Conclusion

Males and children in the age group 1-4 years were more affected by the outbreak. The outbreak has triggered the need for further analytical study because the outbreak was totally limited to children only, occurred in non-adjacent kebeles with no history of travel and lasted for a brief duration. In this outbreak investigation we have learned that forming multidisciplinary team and following each steps of outbreak investigation have paramount importance to reach into valid conclusion whatever the situation may be.

1.2.7 Recommendation

It is necessary to do seroprevalence study of rubella specific antibodies targeting women in the reproductive age group in order to know the proportion of susceptible people so that decision will be made either to give vaccination or not and then minimize the risk of congenital rubella syndrome from future generation. In the regional public health emergency core process there should be well prepared and organized multidisciplinary team armed with the necessary logistics that can promptly, efficiently and effectively investigate outbreaks.

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Chapter 2: Surveillance Data Analysis Report

2.1 Report of 5 year's (2011-2015) Surveillance Data Analysis on Malnutrition, SNNPR, Nov/2016

2.1.1 Abstract

Background: Malnutrition literally means "bad nutrition" and technically includes both over- and under- nutrition. It is a condition that results from eating a diet in which nutrients are either not enough or are too much such that the diet causes health problems. Usually women and children are the most affected group of people by the condition. In Ethiopia, 44 percent of children under age five are stunted, 10 percent wasted and 29 percent of children are underweight. Twenty-seven percent of women age 15-49 are thin, that is, they fall below the cut-off of 18.5 for the body mass index in the year of 2011.

Methods: A descriptive cross sectional study design has been employed by collecting five year's (2011-2015GC) surveillance data of malnutrition. Data cleaning, compilation and analysis was done from September 15 up to 29/2016. Additionally, monthly report of Health Information Management System was reviewed. Data was entered in to and analyzed by Microsoft excel version 2010.

Result: within a period of five years 224,450 cases of malnutrition have been reported through weekly Integrated Disease Surveillance and Response system in the region. Of these 201,936 case patients were treated in out-patient department of health facilities and 22,514 admitted to Stabilization Centers for comprehensive management. Of admitted patients 397 deaths were occurred over the period of five years. In average, the overall incidence of malnutrition in the region was 251 cases per 100,000 people per year. Similarly, the death rate was 0.4/100,000 people per year.

Conclusion: In general the total number of cases of malnutrition is increasing especially starting from 2014 the year that was the lowest incidence rate was recorded in the past five years. The period April to June is identified as a season of malnutrition the period at which the problem reaches its highest peak each year. This finding may help public health officers to conduct preparedness and early warning activities. Personal variables like age, sex and risk factors associated with public health event under surveillance should be included in the format of IDSR for effective data analysis.

2.1.2 Introduction

Malnutrition literally means "bad nutrition" and technically includes both over- and under-nutrition. The World Food Programme (WFP) defines malnutrition as "a state in which the physical function of an individual is impaired to the point where he or she can no longer maintain adequate bodily performance process such as growth, pregnancy, lactation, physical work and resisting and recovering from disease". Although it is rarely listed as the direct cause of death, Malnutrition is estimated to contribute more than half of deaths in children worldwide; child malnutrition was associated with 54% of deaths in children in developing countries in 2001(1).

In other way malnutrition or malnourishment can be defined as a condition that results from eating a diet in which nutrients are either not enough or are too much such that the diet causes health problems. It may involve calories, protein, carbohydrates, vitamins or minerals (4). Most of the time malnutrition is perceived as only inadequate intake of nutrients that is needed for optimal growth and functioning of body systems but, malnutrition involves all the spectrum of undernutrition to over nutrition. Usually women and children are the most affected group of people by the condition. Globally the problem has gained due attention since one of the key target of the United Nations Millennium Development goals was to reduce the prevalence of underweight among children younger than 5 years by 50% between 1990 and 2015. However, neither the world as a whole, nor the developing regions achieved the Millennium Development goals. This is largely due to the deteriorating situation in Africa where all sub regions, except Northern Africa, were failed to meet the goal (2). A recent study estimated that about 53% of all deaths in young children are attributable to underweight, varying from 45% for deaths due to measles to 61% for deaths due to diarrhea (5, 2). Nutritional status is the result of complex interactions between food consumption and the overall status of health and health care practices. Numerous socioeconomic and cultural factors influence patterns of feeding children and the nutritional status of women and children. The period from birth to age two is especially important for optimal growth, health, and development. Unfortunately, this period is often marked by micronutrient deficiencies that interfere with optimal growth (3).

The poor nutritional status of children and women has been a serious problem in Ethiopia for many years. According to Ethiopian Demographic and Health Survey (EDHS) of 2011, 44

percent of children under age of five are stunted, 10 percent wasted and 29 percent of children are underweight. Twenty-seven percent of women in the age group of 15-49 years are thin, that is, they fall below the cut-off of 18.5 for the body mass index (BMI) (6). Therefore, the health sector has increased its efforts to enhance good nutritional practices through health education, treatment of extremely malnourished children, and provision of micronutrients to the most vulnerable group of the population, that is, mothers and children. In addition, the Health Extension Program (HEP) has included nutrition as part of their health packages. A national nutrition strategy and program has also been developed and implemented. Enhanced Outreach Strategy (EOS) with Targeted Supplementary Food (TSF) and Transitioning of EOS into HEP, Health Facility Nutrition Services, Community Based Nutrition (CBN), and Micronutrient Interventions and Essential Nutrition Actions/Integrated Infant and Young Feeding Counselling Services were the strategies and programs of the Health Sector Development Plan IV (2011-2015) in order to alleviate the problem.

Hence, surveillance data analysis of malnutrition is important to know the effectiveness of all the strategies and programs mentioned above and to come up with solutions for the problems that may arise in the surveillance system. Analyzing surveillance data of malnutrition may also trigger further research questions which can help public health officials to design effective preventive and control measures.

Rationale of the study

Malnutrition especially undernutrition is one of the problems that gained public health importance in Ethiopia. It has a greater influence on the health of children and women as well as the overall development of the country. Malnutrition is one of the notifiable health conditions under surveillance in Ethiopia. Data analysis on the situation of malnutrition is essential to know the burden of the problem, gaps encountered in the active and passive search of cases of malnutrition in our surveillance system, the effectiveness of different strategies and programs implemented to improve the problem and most importantly it enables public health practitioners to know the trend of the problem over time. Therefore, Findings of this study can help strengthening the surveillance system and improve the prevention and control programs of malnutrition in the region.

2.1.3 Objectives

General Objective

To describe epidemiological pattern of malnutrition in the SNNPR from 2011-2015GC

Specific Objectives

To determine trends of malnutrition in the SNNPR

To describe the distribution of malnutrition in time, place and person

To describe temporal patterns of malnutrition

2.1.4 Methods and materials

Study area and period

Areas included in the process of data analysis were all zones and special woredas of Southern, Nation, Nationalities and People's region (SNNPR). We studied five years (2011-2015GC) surveillance data of malnutrition**.** Data cleaning, compilation and analysis was done from September 15 up to 29/2016.

Study population: Children and women who have problem of malnutrition and live in the SNNPR

Study design-We used descriptive cross sectional study design

Data source

Regional Public Health Emergency Management (PHEM) core process and planning, monitoring and evaluation core process of SNNPR health bureau were data sources.

Case defination

Severe acute malnutrition: Children age 6 months to 5 years with MUAC less than 11cm and bilateral leg edema OR Children age 6 months to 5 years with bilateral leg edema

Data processing and analysis

After obtaining data from health bureau, data was entered, cleaned and analyzed by Microsoft excel version 2010.

2.1.5 Result

During the period of five years (2011-2015GC), a total of 224,450 cases of malnutrition have been reported through weekly Integrated Disease Surveillance and Response (IDSR) system in the region. Of these 201,936 case patients were treated in out-patient department (OPD) of health facilities and 22,514 (10%) admitted to Stabilization Centers (SC) for comprehensive management. Of admitted patients 397 deaths were occurred over the period of five years. In average, the overall incidence of malnutrition in the region was 251 cases per 100,000 people per year. Similarly, the death rate was 0.4/100,000 people per year.

Table 3: Distribution of malnutrition cases by type from 2011 up to 2015GC, SNNPR, 2016

Zone/Special woreda	2011			2012			2013			2014			2015		
	OPD cases	IPD cases	IPD deaths	OPD cases	IPD cases	IPD deaths	OPD cases	IPD cases	IPD deaths	OPD cases	IPD cases	IPD deaths	OPD cases	IPD cases	IPD deaths
Basketo	137	0	0	151	3	0	152	0	0	88	0	0	41	8	0
Bench Maji	294	1	0	323	34	0	471	53	3	303	42	0	360	79	1
Dawuro	631	18	0	907	11	1	1381	42	0	769	33	1	694	23	1
Gamo Gofa	1840	119	8	2219	133	1	2805	219	3	2423	206	2	3280	546	3
Gedeo	1096	80	1	3114	160	9	2830	171	6	2848	79	1	3649	434	4
Gurage	1401	185	1	1559	226	15	1818	354	8	1782	176	15	1859	101	6
Hadiya	3884	146	0	4572	538	0	4489	240	0	3539	124	0	4831	370	0
Halaba	2917	114	3	2004	370	6	1085	201	0	727	189	0	1213	456	0
Hawassa Town	490	41	2	1112	23	0	669	77	0	758	122	1	694	276	29
Kefa	625	77	2	1528	102	2	898	93	6	657	148	2	382	130	0
Kembata Tembaro	3807	715	4	3866	713	3	2700	250	0	1589	212	3	2130	484	5
Konta	71	0	0	939	8	1	118	3	0	118	4	0	68	2	0
Segen	1359	439	30	1119	344	13	1889	729	24	1265	534	13	1556	610	23
Sheka	3	0	0	3	0	0	13	0	0	3	0	0	14	0	0
Sidama	10713	688	5	10924	1438	35	8471	1066	18	7883	1167	21	9423	1337	6
Silite	5788	329	6	4208	374	1	3069	343	0	1706	315	0	2272	515	0
South Omo	897	162	10	1133	110	7	1719	278	12	1517	233	8	1192	227	1
Wolayita	8538	172	0	10179	572	1	5439	253	1	2793	187	3	3116	325	0
Yem	7	0	0	9	0	0	0	0	0	9	0	0	2	3	0
Region	**44498**	**3286**	**72**	**49869**	**5159**	**95**	**40016**	**4372**	**81**	**30777**	**3771**	**70**	**36776**	**5926**	**79**

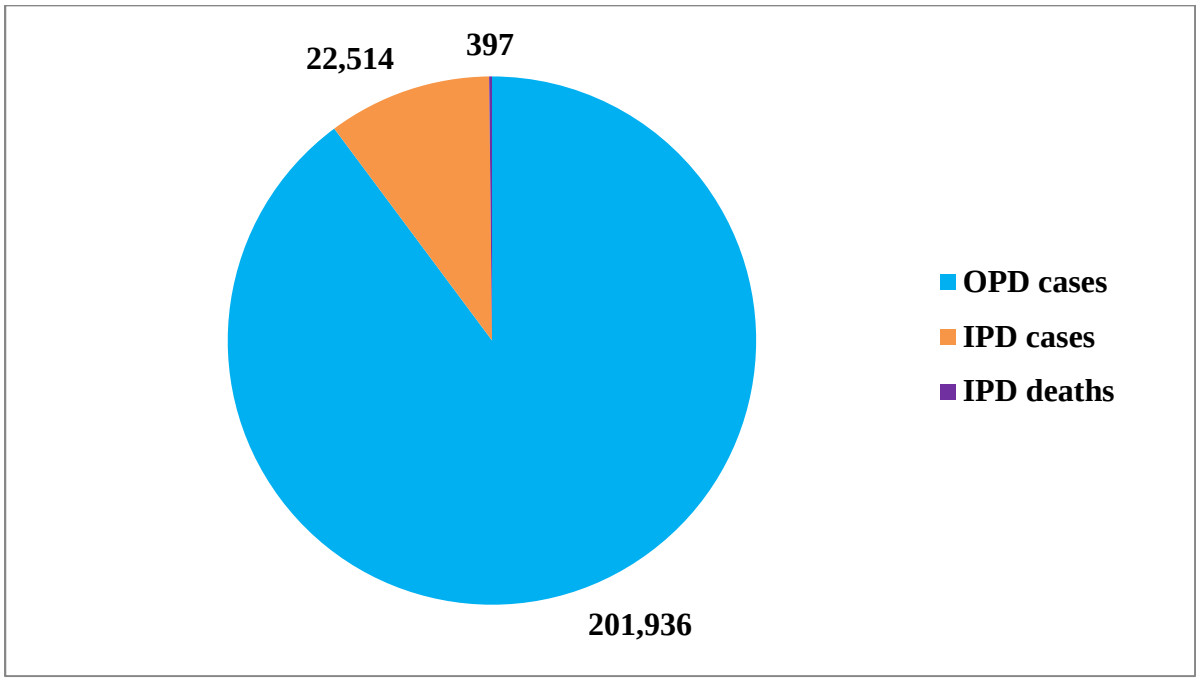

Figure 11: Shows total number of cases and deaths occurred in SNNPR from 2011 to 2015GC

The incidence rate greatly varies between Zones/ Special woredas and between woredas in the zones. The highest incidence rate of malnutrition was recorded in Halaba special woreda, Silte zone and Kenbata Tembaro zone with 625, 422 and 402 cases/100,000 people per year, respectively. Sheka zone, Yem special woreda and Bench Maji zone had 3, 6 and 50cases/100,000 people per year with the lowest incidence rate of malnutrition.

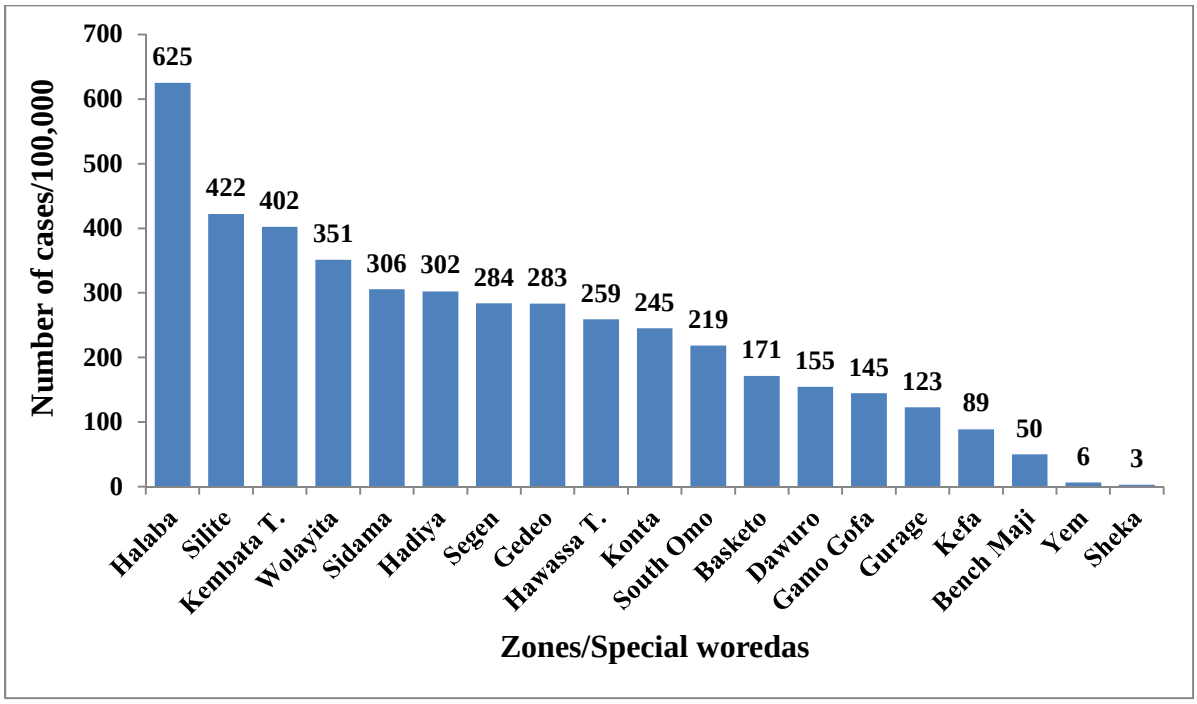

Figure 12: Distribution of total cases of malnutrition per 100,000 people in the Zones/Special woredas of SNNPR, 2016

When we compare the total number of cases with that of cases admitted to Stabilization center (SC), the distribution of cases and rank of incidence rate among zones are different in SC cases. For example, Segen zone ranks 2nd in SC cases but, it is in the 7th position if we take total number of cases that is cases treated in Outpatient Therapeutic Program (OTP). There is no as such big difference in the order of zones which have lowest incidence of SC cases compared to total number of cases.

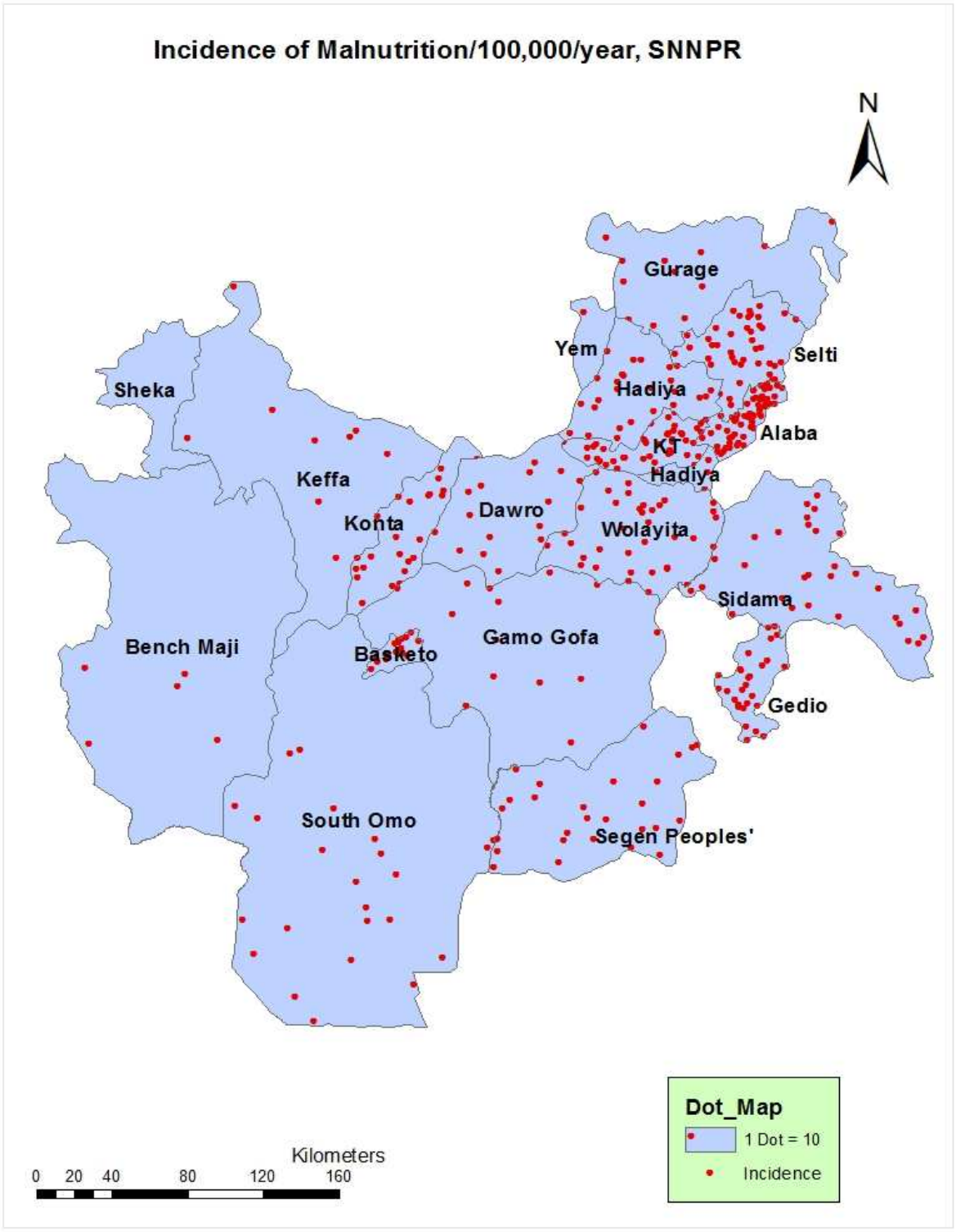

Figure 13: Map of SNNPR shows distribution of total malnutrition over zones/special woredas, 2016

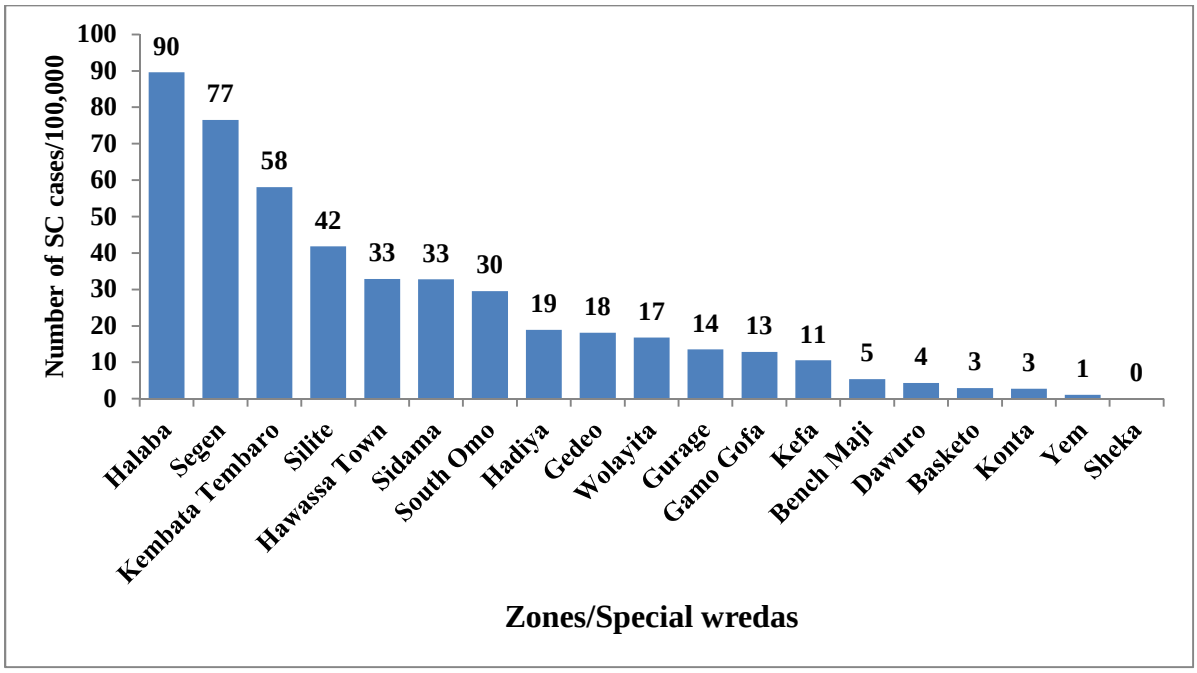

Figure 14: Distribution of SC cases of malnutrition per 100,000 people in the Zones/Special woredas of SNNPR, 2016

Regarding to death rate we have observed totally different scenario. The highest death rate was observed in Segen zone followed by Hawassa Town and South Omo zone.

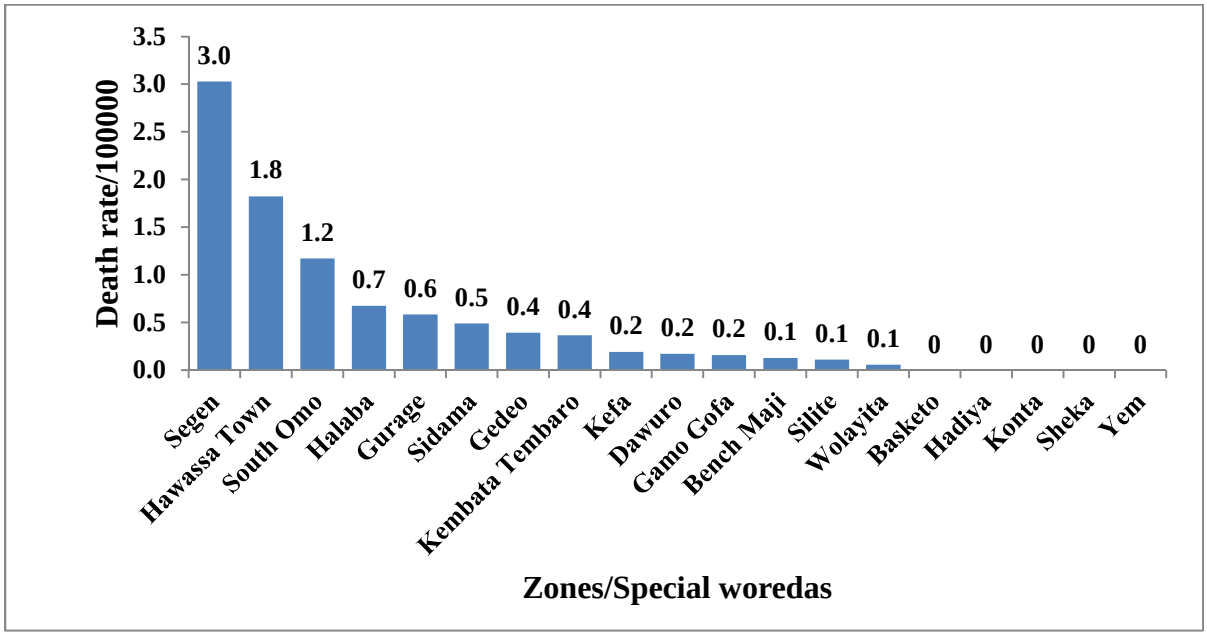

Figure 15: Distribution of death rate due to malnutrition per 100,000 people in the Zones/Special woredas of SNNPR, 2016

The trend of OPD cases, IPD cases and IPD deaths over the past five years are depicted in the following figure and total trend in the next figure. OPD cases of malnutrition reached its highest peak in the year of 2012GC. Then after, the number of cases was gradually decreased by 37% in the year of 2014. Again it was increased by 19% in the year of 2015. The trend of IPD cases and IPD deaths was more or less constant over the period of five years.

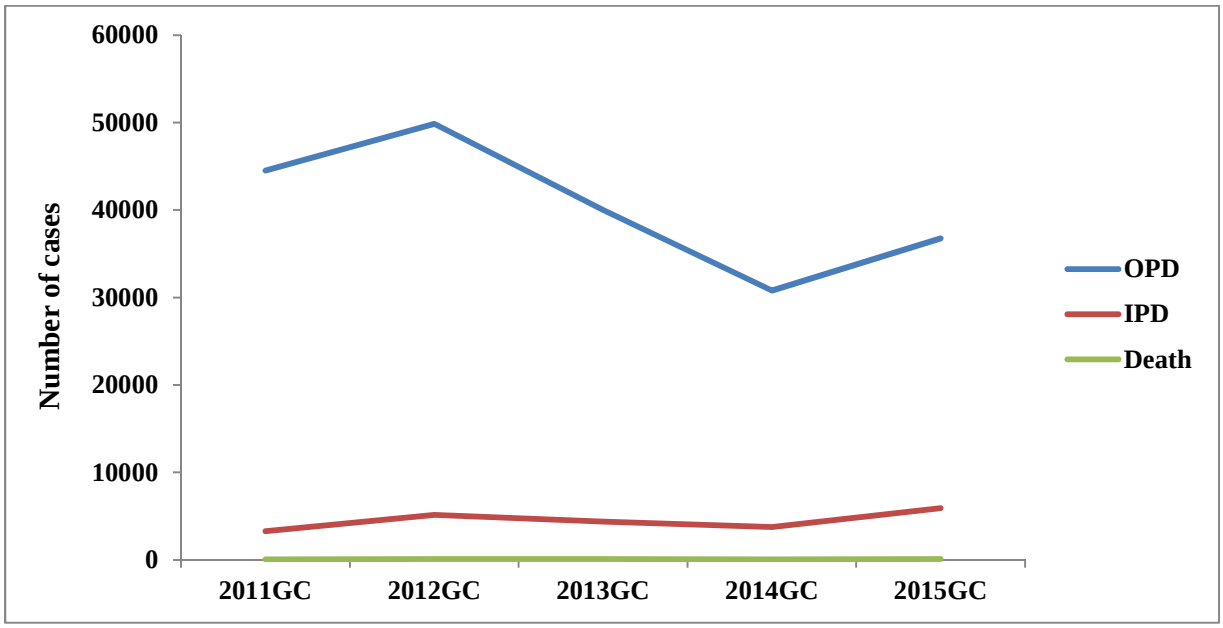

Figure 16: Trend of OPD, IPD and Deaths over the period of five years (2011-2015), SNNPR, 2016

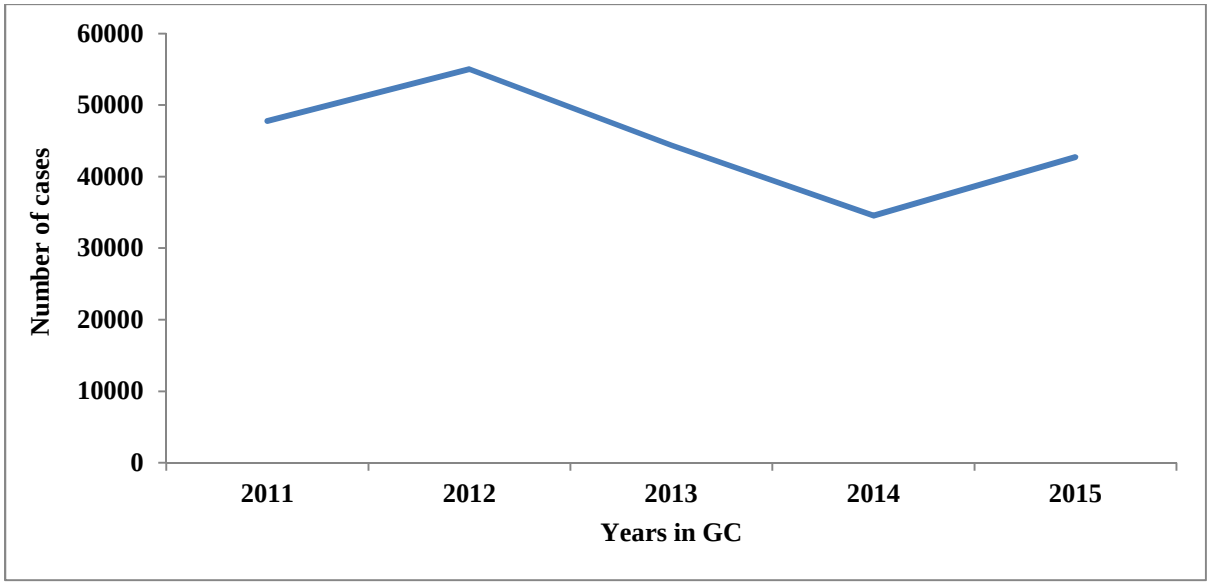

Figure 17: Trend of total cases over the period of five years (2011-2015), SNNPR, 2016

In the following line graph attempt was made to show seasonal variation of trend of malnutrition within each year of the past five years. The trend analysis has showed that the usual period of increment of cases was between the month of April and June. In 2012 there was sharp increase of cases from April to June but, in 2011 the cases started to increase from March, reached its highest peak in June and then started to decrease in the end of July with wide interval of time that was for five months. In 2014 the trend not only has showed lesser number of cases but also it has no sharp rise and falls.

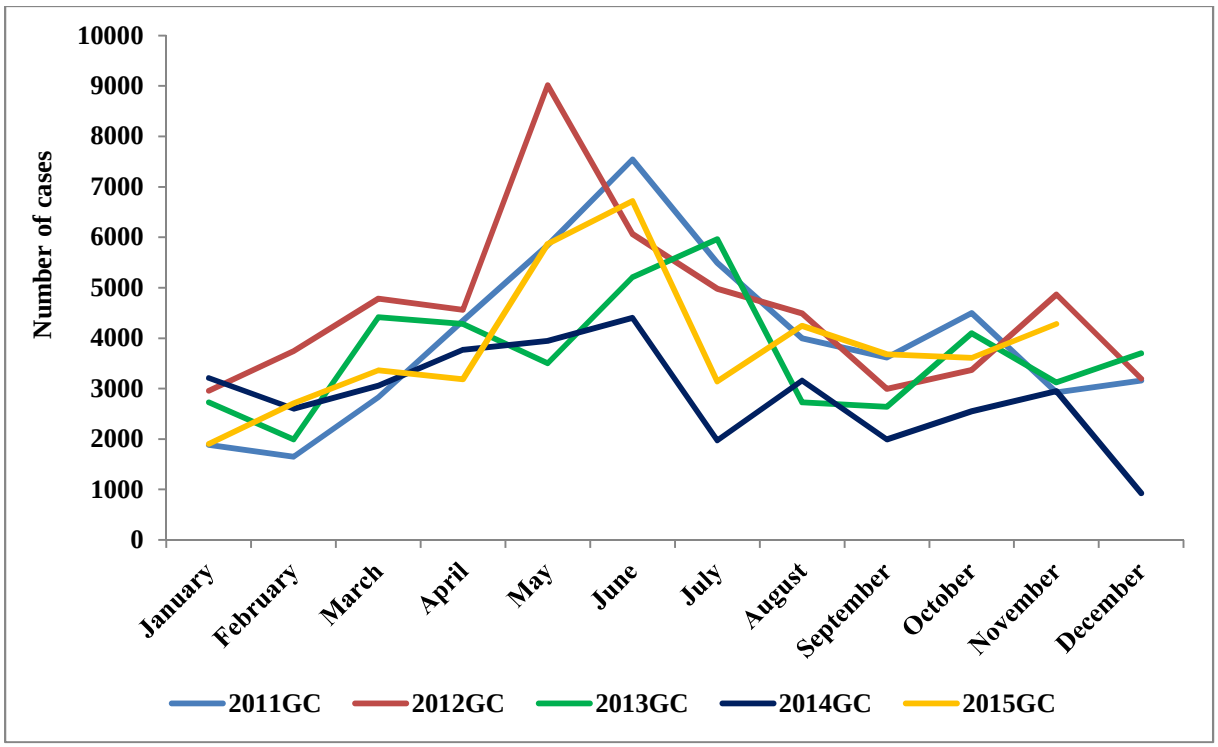

Figure 18: Trend of total cases showing seasonal variation in the distribution of malnutrition from 2011 to 2015, SNNPR

It is not possible to describe the surveillance data in terms of personal characteristics since current surveillance system of the region doesn't capture variables that indicate category of case patients like sex, age and other factors which have epidemiological importance. However, it has been tried to approximate surveillance data by taking same five years aggregate data of HMIS from planning, monitoring and evaluation process of regional health bureau as indicated in the following diagrams.

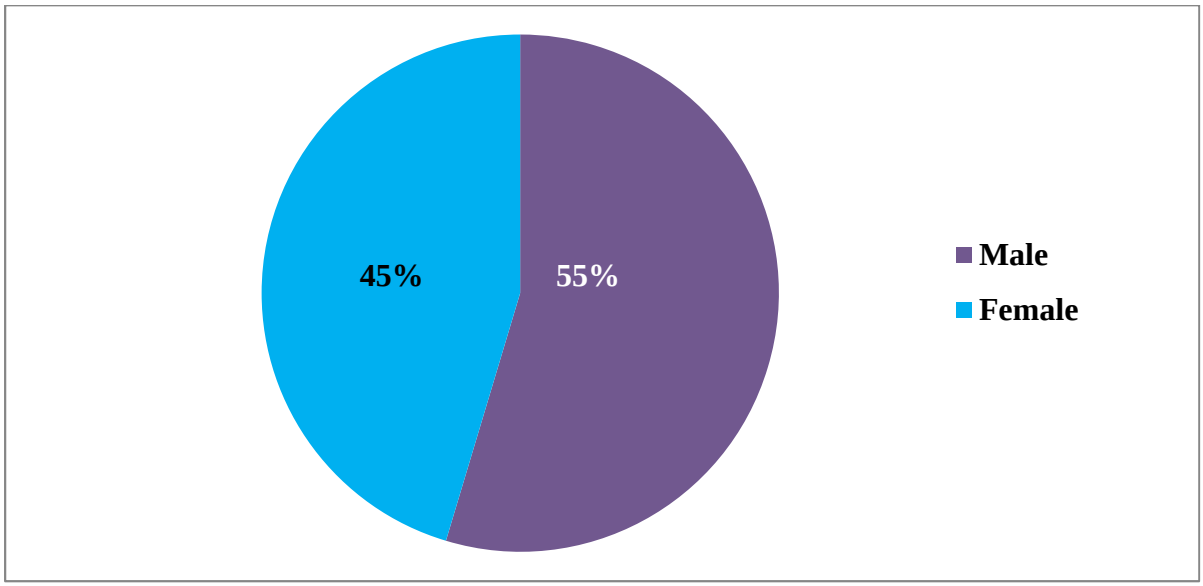

Figure 19: Distribution of total cases of malnutrition by sex from 2011-2015, SNNPR

Males were slightly more affected than females by malnutrition. But, females whose ages are greater than or equal to 15 years were more affected than males. Concerning to distribution of cases by age category, the most affected people were children under the age of five years which accounts about 83% of the total burden of malnutrition.

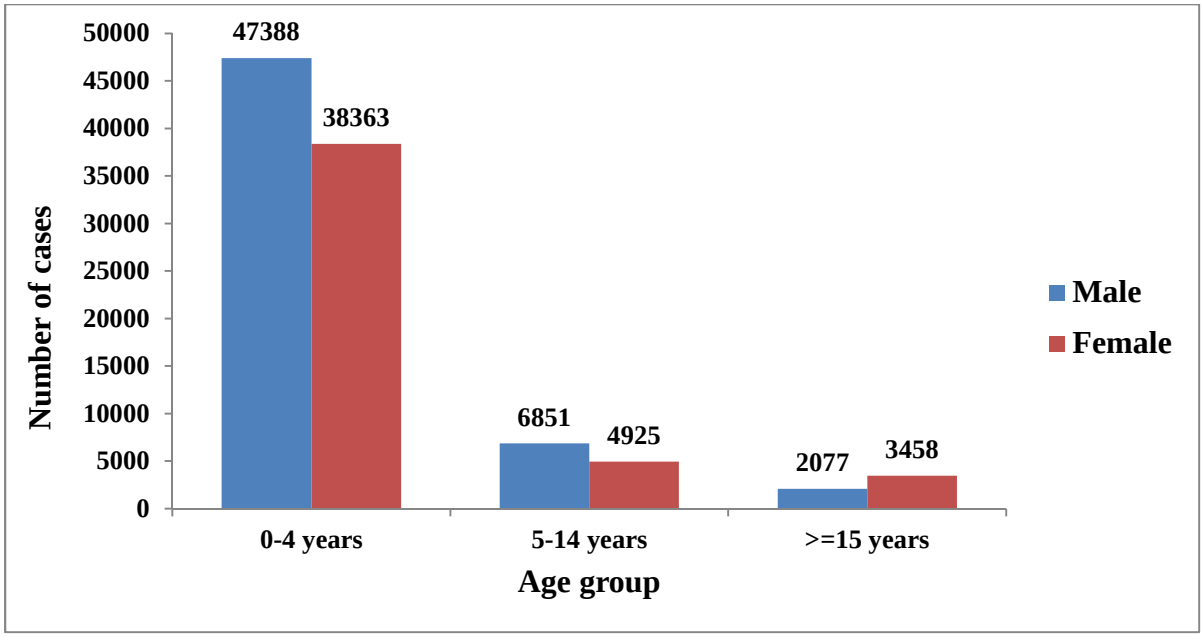

Figure 20: Distribution of total cases of malnutrition by age group from 2011-2015, SNNPR

Even though number of IPD deaths recorded in HMIS is by far greater than IPD deaths reported in the IDSR format of weekly reportable disease (1078 vs 397), more than 70% of inpatient deaths had occurred in the children under the age of five years. Again number of males was greater than females in this case. High number of death recorded in the age group of greater than or equal to 15 years male was most probably due to error of recording because this number of death is unlikely to occur by moderate malnutrition. Data recorded in 2012 had inflated the total number of deaths in this age group. 101 deaths were recorded in 2012 compared to only 18 deaths in the rest four years. However, the exact reason for the increased number of deaths in this age group could not be found.

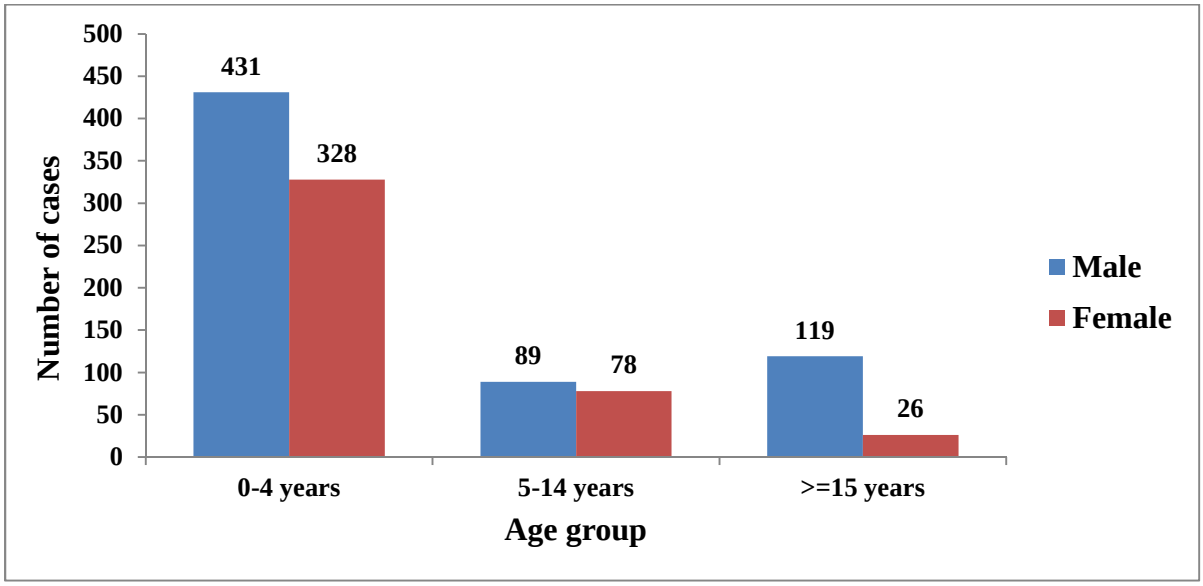

Figure 21: Distribution of total number of deaths due to malnutrition by age group from 2011-2015, SNNPR

2.1.6 Discussion

The overall incidence rate of malnutrition is calculated by taking the average of five year's surveillance data. Of the total cases of malnutrition that have been occurred in the region over the past five years, 10% of cases were severe acute malnutrition which necessitated admission of patients into stabilization centers. The death rate resulted from surveillance data analysis is greatly lower than that of recorded in HMIS in the same years by 63% (79 versus 216, annual average). This has happened mainly due to under reporting of number of deaths through weekly IDSR reporting system.

The highest case fatality rate of malnutrition has been observed in segen zone. Since death was occurred among in-patient cases, this may indicate gaps in the management of severe acute malnutrition in stabilization centers. In the health facilities mortality rate from severe malnutrition should be less than 5% (7). In this regard the region as a whole has low case fatality rate (1.7%) according to finding generated from surveillance data analysis. However, results of data analysis from monthly HMIS report showed that case fatality rate of 5.4%.

The result of trend analysis had showed that there were two peaks of distribution of malnutrition cases that is the years of 2012 and 2015. The case increment in the year 2015 may be justified by the occurrence of drought as a consequence of weather change called El-Niño in the arid and semi-arid areas of the country. The good news is the frequency of malnutrition was lower than that of 2012 by 22% but IPD cases were increased by 13%. In general this has happened due to improved case detection and early warning systems, government commitment in the response to make the situation under control as well as financial and technical support from partners and donors.

Challenges and limitations

Epidemiology is mainly concerned with describing distribution of public heath-events by time, place and person. Surveillance data analysis without determining personal characteristics of case patients is futile in order to direct decisions on public health intervention. The weekly data reporting format of current surveillance system in SNNPR is unable to collect information about personal characteristics such as sex, age and other risk factors related with behaviors of case patients. Hence, the result of data analysis emanated from monthly HMIS report with regard to personal variables may not reflect the exact situation of malnutrition in the community. Because HMIS is institution based but, IDSR system starts from community level. However, it has given some clue about the situation of malnutrition.

2.1.7 Conclusion

In general total number of cases of malnutrition is increasing especially starting from 2014 when the lowest incidence rate was recorded in the past five years. However, the number of IPD cases and IPD deaths remain more or less constant. Trend analysis had revealed that the increment of malnutrition cases repeat itself each year from April to June. This finding may help public health

officers to conduct preparedness and early warning activities in order to prevent unnecessary morbidity and mortality attributed to severe acute malnutrition. There is under reporting of number of deaths of severe acute malnutrition by IDSR system compared to monthly report of HMIS. Children under the age of five years are the most affected age group of population. Moreover, males are slightly more affected than females.

2.1.8 Recommendations

There are many programs and nutrition targeted interventions in the region. In spite of these interventions, the number of cases as well as deaths due to severe acute malnutrition is not decreasing. As a matter of fact, the effectiveness and efficiency of these interventions should be assessed by leaders and implementers. Personal variables like age, sex and risk factors associated with public health event under surveillance should be included in the format of IDSR for effective data analysis. Knowing the season of increased malnutrition cases in each year, officials and PHEM officers in all levels of the health system should avail the necessary resources before the occurrence of case increment so that severe cases and deaths from it can be prevented. All PHEM officers and IDSR focal persons should report the exact number of deaths that had been occurred in stabilization centers in order to know the accurate case fatality rate. Guidelines for management of severe acute malnutrition should strictly be followed by health workers who are in charge of medical care provision.

2.1.9 References

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Chapter 3: Evaluation of Surveillance System

3.1 Report of Typhoid Fever Surveillance System Evaluation, Gedeo Zone, SNNPR, March/2017

3.1.1 Summary

Background: Main objective of integrated disease surveillance and response is improving the use of information to detect changes in time in order to conduct a rapid response to suspect epidemics and outbreaks; monitor the impact of interventions: for example, declining incidence, spread, case fatality, and to facilitate evidence-based response to public health events. Information generated from public health surveillance has crucial impact on health policy design, planning and management. A public health surveillance system is dependent on a clear case definition for the health-related event under surveillance. The evaluation aims at typhoid fever surveillance system which is one of weekly reportable diseases in Ethiopia.

Methods: Cross sectional descriptive study design was employed. Period of data collection was from February 13-27/2017 and the study area was Gedeo Zone, SNNPR. Three woreda health offices, five health centers, four health posts, one private clinic, one NGO clinic and one hospital were selected by lottery method. Structured questionnaire was used which is derived from CDC's updated guideline for evaluating public health surveillance system published in 2001. Records and reports were reviewed including PHEM data base of zonal health department.

Result: There is high turnover of health workers who were trained on integrated disease surveillance and response system. In the health center and health post level there is no any kind of data analysis except for trend analysis of malaria by filling malaria monitoring chart in some health facilities. Weekly report completeness and timeliness of Gedeo zone was 94% and 85% in the year of 2016, respectively. Most of private health institutions are not included in the surveillance system in urban areas.

Conclusion: The surveillance system of typhoid fever is flexible. Has also good report completeness and timeliness which is in accordance with recommendation of World Health Organization. However, it is not simple as well as useful for the detection of outbreaks on time and monitor trends of the disease. Results emanated from data analysis and interpretation has no power to direct appropriate and effective public health responses.

3.1.2 Introduction

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data regarding a health-related event for use in public health action to reduce morbidity and mortality and to improve health (1). Main objective of integrated disease surveillance and response (IDSR) is improving the use of information to detect changes in time in order to conduct a rapid response to suspect epidemics and outbreaks; monitor the impact of interventions: for example, declining incidence, spread, case fatality, and to facilitate evidence-based response to public health events; health policy design; planning; and management (2). The collection of data is achieved through health facilities including private health sectors starting from the community level to the national level by using standardized reporting formats. Decisions can be made at each level of the health system according to the availability of the expertise and resources in that particular level. Including health and health related events in the list of conditions that to be under surveillance depends on many factors such as; public health importance of a disease/event, epidemic potential and resources available to monitor the health event. That is why monitoring and evaluation of surveillance system is needed.

A public health surveillance system is dependent on a clear case definition for the health-related event under surveillance. The case definition of a health-related event can include clinical manifestations, laboratory results, epidemiologic information and/or specified behaviors, as well as levels of certainty (e.g., confirmed/definite, probable/presumptive, or possible/suspected). The use of a standard case definition increases the specificity of reporting and improves the comparability of the health-related event reported from different sources of data, including geographic areas (3). The evaluation aims at typhoid fever surveillance system which is one of weekly reportable diseases in Ethiopia.

3.1.3 Description of surveillance system

Public health importance of typhoid fever

Salmonella enterica-the causative agent of typhoid fever (serovars typhi and paratyphi A, B, & C) is a leading cause of community-acquired bloodstream infections in many low- and middle-income countries. These strains may be referred to collectively as typhoidal Salmonella, whereas other serovars are grouped as nontyphoidal Salmonella (NTS). Humans are the only reservoirs

for Typhoidal Salmonella strains that cause typhoid fever and paratyphoid fever, together referred to as enteric fever (4). This disease is most prevalent in South Central Asia and South East Asia with more than 100 cases per 100,000 persons per year. Regions of medium incidence (10-100 cases per 100,000 persons per year) include the rest of Asia, Latin America, and the Caribbean and Oceania, except for Australia and New Zealand. It is estimated that there are 22 million new cases of enteric fever annually, with 200,000 deaths (5). In areas of endemicity and in large outbreaks, most cases occur in persons aged between 3 and 19 years. In 1997, for example, this age range was reported during an epidemic of the disease in Tajikistan. In Indonesia, people aged 3_19 years accounted for 91% of cases of typhoid fever and the attack rate of blood-culture-positive typhoid fever was 1026 per 100 000 per year (6).
In Africa, there is paucity of incidence data of typhoid fever. However, in 2009, the international vaccine institute conducted the typhoid surveillance in Africa program (TSAP) and found that in many of the African sites incidence is as high as that observed previously in Asia, with ranges up to 383 per 100,000 person-years in Burkina Faso (7).

Depending on the clinical setting and the quality of available medical care, up to 10% of typhoid patients may develop serious complications. The presence of occult blood is a common finding in the stool of 10-20% of patients, and up to 3% may have melena. Intestinal perforation has also been reported in up to 3% of hospitalized cases. Altered mental status has been associated with a high case-fatality rate. Typhoid meningitis, encephalomyelitis, Guillain-Barré syndrome, cranial or peripheral neuritis, and psychotic symptoms, although rare, have been reported. Other serious complications documented with typhoid fever include hemorrhages (causing rapid death in some patients), hepatitis, myocarditis, pneumonia, disseminated intravascular coagulation, thrombocytopenia and hemolytic uremic syndrome. Patients may also experience genitourinary tract manifestations or relapse, and/or a chronic carrier state may develop.1-5% of patients, depending on age, become chronic carriers harboring S. typhi in the gallbladder. The propensity to become a carrier follows the epidemiology of gall bladder disease, increasing with age and being greater in females than in males. The role of chronic carriers as a reservoir of infection was studied in Santiago, Chile, where a crude rate of 694 carriers per 100 000 inhabitants was found
The infection is transmitted by ingestion of food or water contaminated with faeces. Ice cream is recognized as a significant risk factor for the transmission of typhoid fever. Shellfish taken from

contaminated water, and raw fruit and vegetables fertilized with sewage, have been sources of past outbreaks. The highest incidence occurs where water supplies serving large populations are contaminated with faeces. Epidemiological data suggest that waterborne transmission of S. typhi usually involves small inocula, whereas foodborne transmission is associated with large inocula and high attack rates over short periods.

The disease can be prevented by general preventive measures as of most communicable diseases which are transmitted by faeco-oral route. These are making safe drinking water accessible, strengthening good hygiene & sanitation practices, improving food handling & processing mechanisms including health education to raise public awareness. Safe and effective vaccines are also available approved for persons aged over two years and who are travelling to typhoid fever endemic areas (6).

3.1.4 Purpose and operation of the surveillance system

The purpose of integrated disease surveillance and response system is to detect changes in time in order to conduct response activities, suspect epidemics and outbreaks, monitor the impact of interventions and to facilitate evidence based response to public health events, health policy design, planning and management (2). Moreover, IDSR can be used as a bench mark to conduct epidemiologic and laboratory research as well as to generate and test hypothesis (8).

Case definition

Suspected: Any person with gradual onset of remittent fever (rising in step ladder fashion) in the 1st week headache, arthralgia, anorexia, constipation and abdominal pain

Confirmed: A suspected case with Widal test "o" titer of 1/160 and more or
A suspected case with positive blood culture at the 1stweek or positive stool culture at 3rd, 4th and 5th week of illness (9)

Chronic carrier: Excretion of S. typhi in stool or urine (or repeated positive bile or duodenal string cultures) for longer than one year after the onset of acute typhoid fever. Short-term carriers also exist but their epidemiological role is not as important as that of chronic carriers. Some patients excreting S. typhi have no history of typhoid fever (6).

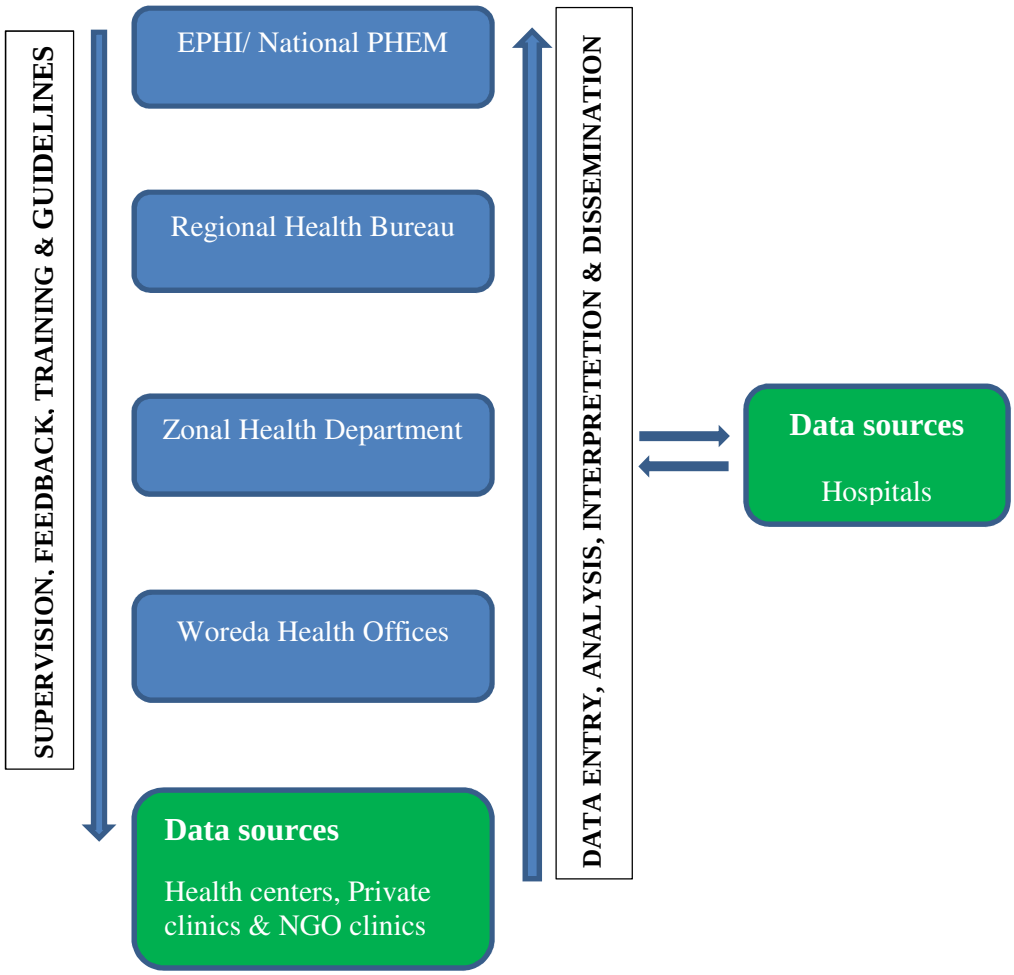

Figure 22: Shows the actual flow of information in typhoid surveillance system, SNNPR, 2016

3.1.5 Purpose and scope of the evaluation

In 2016, there were 373,313 total cases of typhoid fever that have been captured through the surveillance system in the region, SNNPR. Despite this huge number of cases nothing has been done to minimize it. In addition, it has never been evaluated before in Gedeo zone. Therefore, the aim of this evaluation is to determine whether typhoid fever surveillance system is effective or not under the umbrella of integrated disease surveillance and response system of Ethiopia. The evaluation includes both integrated disease surveillance and response system in general and typhoid fever surveillance system in particular. The scope of evaluation encompasses Zonal level by taking sample woreda health offices and health facilities.

3.1.6 Objectives of the surveillance system evaluation

General

To evaluate the effectiveness of typhoid fever surveillance system in the process of making evidence based decision for public health interventions

Specific

1. To describe how the surveillance system operates from community to national level
2. To assess attributes of typhoid fever surveillance system-simplicity, flexibility, data quality, acceptability, representativeness, timeliness and stability
3. To determine usefulness of typhoid fever surveillance system in detecting outbreaks and respond to it on time

3.1.7 Methods & materials

Cross sectional descriptive study design was employed. Period of data collection was from February 13-27/2017 and the study area was Gedeo Zone, SNNPR. After determining number of health institutions to be included in the sample in each woredas, three woreda health offices, five health centers, four health posts, one private clinic, one NGO clinic and one hospital were selected by lottery method. Public health emergency management (PHEM) coordinators and IDSR focal persons working in the respective health institutions were interviewed using structured questionnaire which was derived from CDC's updated guideline for evaluating public health surveillance system published in 2001. Records and reports were reviewed including PHEM data base of zonal health department.

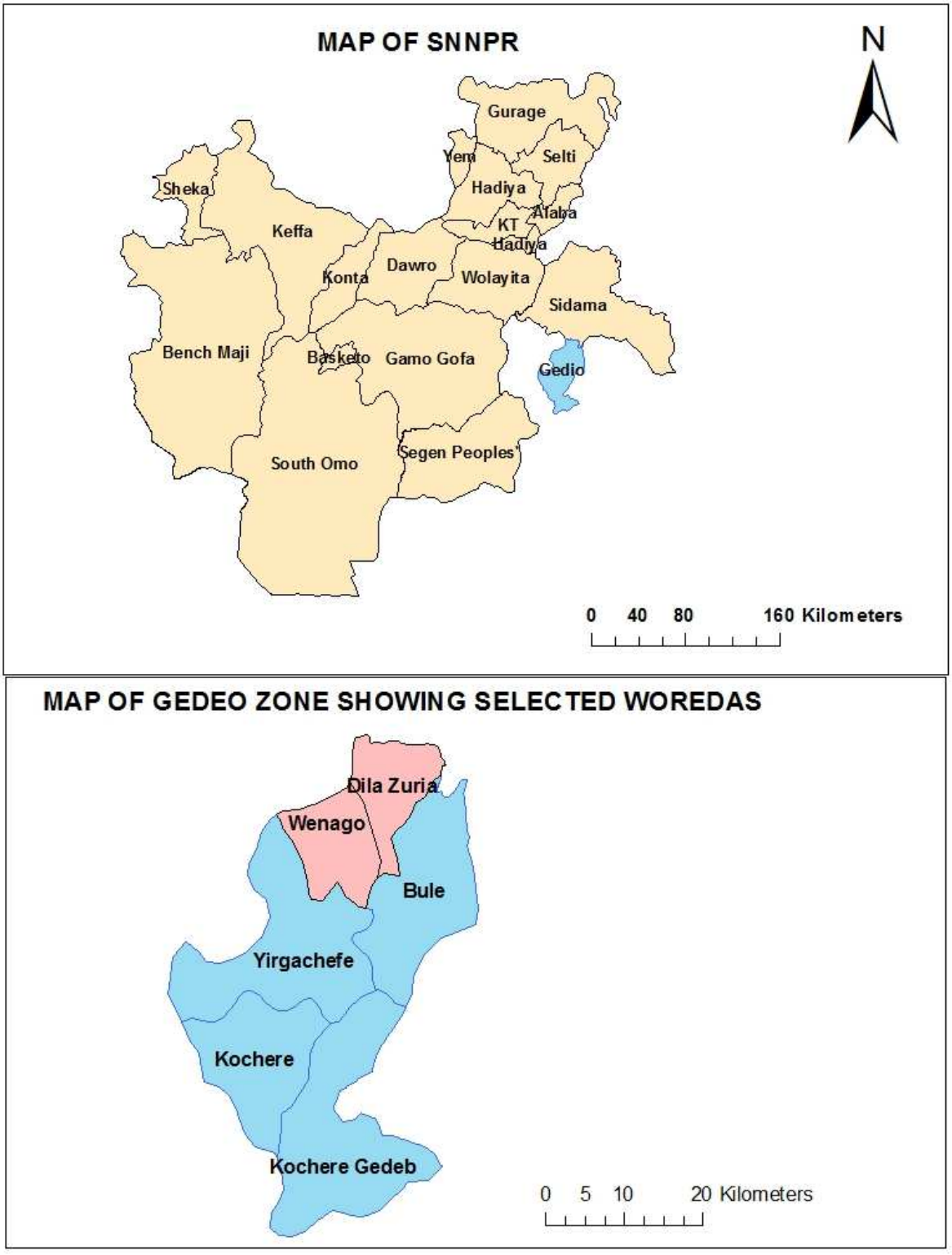

Figure 23: Map of Gedeo zone showing area of assessment, Gedeo zone, SNNPR 2016

3.1.8 Results

Communication and reporting system

The reporting timetable for weekly reportable diseases is every Friday from health posts to health centers in most cases and on Monday when there is inconvenience. However, in all visited health posts (4 health posts) typhoid fever is not reported since it cannot be diagnosed in this level. The same is true for the rest of health posts throughout the zone as described by the zonal PHEM officer. Health centers send a weekly report to woreda health offices every Monday till midday, then woreda health offices to zonal health department every Tuesday and zonal health department to regional health bureau every Wednesday till midday. There are different means of communication depending on the type of health facilities and level of health system. All health centers and health posts use paper based reporting system. Of six woredas and two town administrations in the zone two woredas send their report using hard copy but, the rest six use e-mail and also zonal health department uses e-mail to communicate with regional health bureau. In the situation of public health emergency all facilities in the health system use phone call as a means of communication.

Data analysis, Computer Skill and training assessment

Of the 15 visited health institutions including Gedeo zone health department only three PHEM officers had taken training on surveillance. Namely, coordinator of zonal PHEM, Wonago woreda health office PHEM officer and Wonago health center IDSR focal person. This is mainly because of two reasons. One is high turnover of health workers who were trained on integrated disease surveillance and response system. The other one is lower attention has been given to the surveillance system in lower health system structures specifically Woreda level and health facilities under it. Zonal health department, Wonago woreda health office and Dilla zuria woreda health office have computer for data entry and analysis. But, Dilla town administration health office and other health facilities do not have computer. Peculiar about Dilla town health office is that it doesn't have even PHEM structure hence the system is run by IDSR focal person who have another responsibility subordinated to carryout surveillance activities. In the health center and health post level there is no any kind of data analysis except for trend analysis of malaria by filling malaria monitoring chart in some health facilities. When we assess other weekly reportable diseases, including typhoid fever, the IDSR focal persons report number of cases

merely for reporting purpose. Zonal health department and Woreda health offices do data analysis in a quarterly base not because of doing response activities but it is required by the organization for periodic evaluation of general health performance. All health facilities have denominators like total population disaggregated by sex and age group which are essential to calculate rates and proportions. The reporting formats has limited variables that PHEM officers unable to fully analyze surveillance data by time, place and person because it lacks personal characteristics which are very important variable for generation of valuable information.

Assessment of availability of surveillance documentation, registers and forms

At the zonal health department level all the major guidelines and reporting formats are available that is PHEM guideline, weekly reporting format, line list, case based reporting form and daily epidemic reporting format. However, woreda health offices do not have line list (eg. Dilla town health office) and Lab-specimen based surveillance reporting form (eg.Wonago wereda health office). More than 80% of health facilities do not have PHEM guideline, line-list, case based reporting form and daily epidemic reporting format. All Health facilities and health offices had posted case definitions for diseases under eradication and elimination (i.e. Measles, AFP/polio, and NNT) but, for typhoid fever and other weekly reportable diseases do not. Almost all PHEM officers and IDSR focal persons do not know standard case definition of typhoid fever.

Epidemic Response and Preparedness

Zonal health department and Dilla zuria woreda health office have plan for epidemic preparedness and response (EPRP). However, Dilla town administration health office and Wonago woreda health office do not have the plan. Besides all health facilities do not have EPRP. Neither the zonal health department nor the Woreda health office had supported EPRP by budget and there was no stoke of drugs preserved for epidemic response. There is no car assigned for Emergency response in all wredas but the Zonal health department uses car assigned for Ethiopia Field Epidemiology Training Program (EFETP) when public health emergency happens. Emergencies were addressed by integrating logistics from other activities or by switching off resources allocated to other programs. Emergency drugs and supplies were mobilized or requested by the respective level of health system when outbreaks occur. Most of the time there is involvement of partners in all woredas providing medical supplies, financial and technical assistance. All health offices and health facilities have established Rapid Response

Team and multi sectoral emergency task forces but, none of these committees had regular meeting. They meet and discuss only when there is public health emergency

Outbreak investigation and case confirmation

In the year 2016GC there were outbreaks of Acute Watery Diarrhea (AWD) and scabies in the zone. One of them was investigated by EFETP residents. The case of AWD was confirmed in the regional public health laboratory and case of scabies was not laboratory confirmed since it can easily be distinguished clinically. Shortage of water treatment chemical, insufficient safe drinking water, low coverage of fully functioning latrine and shortage of scabicidal medications were some of the challenges faced by zonal health department. All health offices and health facilities do not have checklist for outbreak investigation except zonal health department. Case confirmation of typhoid fever is difficult because of lack of rapid definitive test to ascertain cases. As a result of this we cannot verify whether an increase in the number of typhoid cases is due to outbreak or simply due to false positive results.

Supervision and Feedback

Both the zone and the woredas had supervision plan but, none of them had accomplished as stated in the plan. Supervision was usually conducted in the form of an integrated supportive supervision (ISS) in all woredas as well as in the zone. There is no PHEM specific supervision at all levels. Zonal health department had been supervised and given feedback one time in the year 2016 by the regional PHEM and they supervised woredas in ISS frame work. However, all the health centers do not have supervision plan and do not supervise health posts. Zonal health department has supervised all woredas in the zone four times in 2016 and have given written feedback to the woreda health offices but not for health facilities.

Usefulness of the surveillance system

In the year of 2016, the reported cases all over the zone were 26,232 outpatient department cases (OPD) and 79 inpatient department cases (IPD) of typhoid fever with no deaths. It is not possible to say typhoid fever surveillance system is useful to permit accurate diagnosis in order to detect outbreaks early on time, estimate the magnitude of morbidity and mortality and evaluate effectiveness of prevention and control programs. The reason is that not only because of the difficulty encountered in diagnosis of typhoid fever but also no documents were found that depicts trend analysis of typhoid fever during the period of data collection.

Status of surveillance system attributes

Simplicity

Even though weekly data reporting format is easy to fill by all level health professionals, it is very difficult to clinically distinguish typhoid fever from other acute febrile illnesses since they have similar signs and symptoms. Furthermore, the widal test currently used to diagnose typhoid fever is neither sensitive nor specific to the disease. To confirm cases of typhoid fever the gold standard test is blood culture and it takes at least 24 hours to report the test result. Therefore, data collected without the usage of confirmed case definition is problematic to data analysis, interpretation as well as arrive at decision and to implement appropriate public health intervention. The weekly reporting format lacks personal characteristics (i.e. age and sex) which have a paramount importance for outbreak investigation. To compile data on weekly report format, all interviewees have said that it only takes 10 up to 15 minutes. Hence, we can say the surveillance system helps to record and report data on time.

Flexibility

All PHEM officers and IDSR focal persons working at zonal health department, woreda health offices, health centers, private clinics, NGO clinics and hospital have said that it is possible to include new health events in the current reporting format which were not listed in the nationally notifiable diseases. They have also justified that in the reporting format there is a blank column which says "other" so that a new variable or disease entities can be incorporated in the form. In general the surveillance system is easy to be integrated with other systems. Because surveillance system uses standardized reporting format throughout the country it is easy to add new information technologies.

Data quality

More than three fourth of IDSR focal persons and health extension workers were not trained on IDSR and supervision was not regular especially for lower levels that is health centers, private health facilities and health posts. Weekly report completeness of Gedeo zone was 94% in the year of 2016. All woredas in the zone have sent the report including late report. 92% of health facilities were active participants of the surveillance system in the same year. We have tried to

review remaining copies of report. Greater than 90% of records were readable, clear and with no blank spaces in the sampled health facilities.

Acceptability

Almost all government health facilities accept current system of public health surveillance and they are well engaged in the surveillance activities except one health post in Dilla zuria woreda, under Chichu health center which has poor participation as evidenced by late reporting most of the time. The reason given by Chichu health center IDSR focal person was physical inaccessibility of the health post hindered to conduct regular supervision. Most of private health facilities were not fully engaged in the surveillance system. This is because partly lack of understanding of the relevance of the data to be collected and partly there is no supervision and feedback mechanism from respective health offices and there is no dissemination of information produced from data analysis back to reporting sites. For example, in Dilla town there are many private health facilities where significant proportion of population are served but, the surveillance system is very weak. Even we can say the system is not existed. It is the IDSR focal person that routinely collects the data from registers going to each clinic every week. If the focal person in the health office is absent from his work for prolonged time, there will be no report from this facilities. Therefore, we cannot say this is a surveillance system in this case. Apart from PHEM and IDSR focal persons other health professionals have no awareness about the surveillance system. All governmental and non-governmental health facilities use standard reporting format.

Representativeness

The surveillance system is relatively representative for population residing in rural areas compared to population living in urban areas. The reason is all people residing in rural areas tend to utilize health services in governmental health facilities which are covered by the system near to 100%. Those people who can afford health services of private clinics usually go to private health facilities in urban areas and most of these institutions are not covered by the surveillance system. Therefore, the rural population is well benefited than urban population by the surveillance system. The surveillance reporting format enables to include limited number of socio demographic variables-only time and place. Personal characteristics such as age, sex and risk factors for the occurrence of a disease were not contained within the format.

Timeliness

In the year of 2016, the surveillance report timeliness of Gedeo zone was 85% which is above minimum standard of recommendation of world health organization (WHO) for timeliness and completeness that is 80%. The timeliness varies from woreda to woreda and health facility to health facility with narrow interval. It ranges from 83% of Kochore woreda which was lowest performance to 87% of Gedeb woreda which was highest performance in the zone.

Stability

In Chichu health center of Dilla zuria woreda, the surveillance system was interrupted for two weeks due to conflict occurred all over the zone except Bule woreda late September, 2016. In Dilla town health office, it was interrupted for two weeks because of AWD outbreak and for two weeks due to the conflict. However, the surveillance system was continued without interruption in the rest of health facilities visited. There were times when the reporting formats were unavailable. For two months in Dilla health center and for more than four months in Kara soditi health post. As a result they have been obligated to report surveillance data on a plain paper during those times. Restructuring had affected the surveillance system in such a way that health workers who took special training on PHEM were shifted to another core processes leaving the surveillance system with unskilled officers in many health offices and health facilities.

Sensitivity and predictive value positive

It was not possible to assess these attributes of surveillance system because of low specificity of diagnostic test used to identify cases of typhoid fever and the system lacks representativeness for the population under surveillance

3.1.9 Discussion

Whenever we start to evaluate a surveillance system, it is important to keep five components of the system in mind. These are the priority diseases targeted for surveillance, the structure, core functions, support functions and quality of the system (10). Typhoid fever is a communicable disease well known to cause a great deal of morbidity and that is why it was put under surveillance. However, the study results have showed that the surveillance system of typhoid fever did not reach at the community level that is, health post and health development army

(HAD) level because health extension workers and HAD leaders could not identify the disease. There is no community case definition for typhoid fever. Data collection starts from health facilities (health centers, some of private clinics, NGO clinics & hospitals). Based on the results of evaluation and objectives of surveillance, we cannot say the current surveillance system of typhoid fever is useful. None of the health facilities and health offices as well as zonal health department ever analyzed and used information generated from data analysis regarding to typhoid fever. "The reason for collecting, analyzing and disseminating information on a disease is to control that disease. Collection and analysis should not be allowed to consume resources if action does not follow." (11)

Nowadays, health centers have a capacity to send reports of health services to higher level through electronic health management information system (e HMIS) timely and efficiently. But, this is not the case for IDSR software which is suspended in the woreda level even though some of the woredas were not using it mainly for reason of maintenance problem and lack of skill to manipulate it.

From the five components of a surveillance system one is structure of the system. The need for networking and partnership among implementers and stakeholders is to identify public health threats early, mobilize resources for response activities and synergy different expertise to control the public health event. Rapid response team (RRT) and multi-sectoral epidemic preparedness and response task force were established in all woredas and health facilities except Dilla town health office which has no multi-sectoral epidemic preparedness and response task force. Additionally, this office as any of other offices under town administration in the region has no PHEM structure. The committees do not meet regularly and they usually carry out meetings only when there is public health emergency.

Case detection, registration and confirmation are crucial elements among core functions of surveillance system. The type of lab test used to diagnose typhoid fever throughout the surveillance system is widal test. This test can be negative in up to 30% of culture-proven cases of typhoid fever. On the other hand, salmonella typhi shares O and H antigens with other salmonella serotypes and has cross-reacting epitopes with other Enterobacteriacae, and this can lead to false-positive results. Such results may also occur in other clinical conditions, e.g. malaria, typhus, bacteraemia caused by other organisms, and cirrhosis (6, 10). The essence of

collecting data is to analyze and interpret it in order to take action at each level of health system. Regarding this, data analysis and interpretation process is very weak at woreda and health facility level. Health facilities do not analyze data at all but, woreda health offices try to analtze quarterly just for the sake of performance evaluation. Epidemiological information has to be described in terms of time, place and person variables whereas the standard weekly reporting format which is currently in use throughout the region does not allow collecting data about personal characteristics of case patients. This has a negative impact in the data analysis and then decision making process.

Quality of surveillance system is measured by its attributes. These attributes are simplicity, flexibility, acceptability, representativeness and so on. These and other attributes have been assessed in this study. Concerning to flexibility of the system, it has a good flexibility since it is easy to add new variables in the reporting format. Simplicity of the system is controversial. If we are thinking about the ease of compiling reports and filling data on a form, yes it is simple. Just it is a matter of 10-15 minutes. However, all level health professionals do not understand case definitions of typhoid fever equally and detection of true cases from non-cases is the most difficult task for health care workers. Representativeness refers to the degree to which the reported cases reflect the occurrence and distribution of all the cases in the population under surveillance (10). When we assess representativeness according to this definition, the surveillance system is not representative. There are two reasons for this. One is significant proportion of the population seeks medical care from non-governmental sources that do not report to surveillance system. Secondly, the health facilities do not have the capacity to accurately diagnose typhoid fever.

3.1.10 Conclusion

The surveillance system of typhoid fever is flexible. Has also good report completeness and timeliness which is in accordance with recommendation of WHO. However, it is not simple as well as useful for the detection of outbreaks on time and monitor trends of the disease. Results emanated from data analysis and interpretation has no power to direct appropriate and effective public health responses.

3.1.11 Recommendations

- The usage of eIDSR should be strengthened on all woreda health offices and should be installed in health centers & hospitals for reporting and data analysis purpose.
- EPHI should incorporate personal variables in the weekly reporting form in order to describe epidemiologic phenomenon by time, place and person.
- Capacity building activities such as continuous training and process specific supportive supervision with feedbacks should be conducted up to health post level.
- To increase representativeness of the surveillance system all private clinics have to report surveillance data to the respective public health structure and the health offices should reinforce private clinics so that routinely reporting surveillance data become a custom.
- In town administrations health offices there should be PHEM structure
- RRT and multi-sectoral epidemic management and response task force should carry out their duties as stated in national PHEM guideline.
- Researchers in the field of development of efficient and effective diagnostic methods have to come up with new highly sensitive, specific and rapid lab tests

3.1.11 References

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Chapter 4: Health Profile Description Report

4.1 Health Profile Description Report of kochere District, Gedeo Zone, SNNPR, 2016

4.1.1 Summary

Background: A comprehensive community health profile includes: A narrative description of the given community, community strengths and challenges, demographic and economic data, health status data, community resources, including services, coalitions, and systems. The summarized data and prioritized health problems are important for public health officials as well as decision makers. They use it for planning, implementation and evaluation of public health programs. It helps in prioritizing health and health related conditions occurring within the communities. The purpose of this study was to identify the district's health and health related problems and provide evidence based information for priority setting.

Methods: The study was conducted from Jan 27 up to Feb 10/2016. Data was collected by using comprehensive checklist through face to face interview of responsible officials and experts in respective organizations as well as review of available records in health offices and other government sectors of the district. Furthermore, review of records in the health office was carried out.

Result: Only 7.6% of kebeles and 33% of health facilities have access to telecommunication. Out of 26 kebeles only 8 have electricity which is about 30% and out of 6 health centers in the district only 3 have electricity. Two of the 6 health centers have water supply which is 33%. Safe drinking water coverage is 44.9% in urban kebeles whereas it is less than 10% in rural. 50 percent of the kebeles are malarious. TB detection, treatment success and cure rate was 10.8% 40% and 32%, respectively. The number of eligible people for Provider Initiated HIV Counselling and Testing (PIHCT) was 65,980 but the achievement was only 3,001 with the coverage of 4.5%.

Conclusion: Shortage of water, power supply and telecommunication facility have a negative effect in fulfilling health needs of the community. Integration of TB and HIV services is not well done. More importantly, TB detection rate, treatment success rate and cure rate are very low from what is expected. Diseases related with poor hygiene and sanitation had been among the 10 top causes of morbidity.

4.1.2 Introduction

Health profile description is a system of collecting, organizing and summarizing health and health related data. The information may include data already collected and published about a community or information collected by the organizations or individuals creating the profile. A community health profile includes both previously identified health issues and the identification of new, emerging issues. A comprehensive community health profile includes: A narrative description of the given community, community strengths and challenges, demographic and economic data, health status data, community resources, including services, coalitions, and systems and interpretation of data presented, from both the perspective of the health council and the broader community(4). The summarized data and prioritized health problems are important for public health officials as well as decision makers. They use it for planning, implementation and evaluation of public health programs. It helps in prioritizing health and health related conditions occurring within the communities.

The purpose of this study is to assess and describe health profile of Kochere district. Result of the assessment will have paramount importance in identifying the district's health and health related problems to provide evidence based information for priority setting.

As most of the districts in Ethiopia, epidemic prone communicable diseases are common in the district. Until this data was collected, it is apparent that there is no one had assessed the health profile of the district before. As a result of this, the district was chosen purposely so as to identify which health related problems are most prevalent and that needs priority.

Rationale of the study

Describing health profile of Kochere district is helpful to address the current gap of community health in the district, stakeholders will use the findings for priority setting; and it is important to understand the demographic, socio-economic, morbidity, mortality and other health related data of the district which will be used as baseline information for planning of health activities. Health profile generates data which can be used at community level. The finding from the health profile description will help the district and other stakeholders for public health decision making.

4.1.3 Objectives

General objective

To assess and describe health status of the community; health indicators and identify problems for priority setting.

Specific objectives

- To assess health status and indicators of the district
- To describe existing health information
- To assess human resources of the district
- To identify major problems for priority setting

4.1.4 Methods

Study area

Kochere district is one of the 8 districts in the Gedeo Zone & found in about 64km from Zonal town, Dilla. It also found in a distance of 154km from Hawassa in the South direction.

Study Period

The study was conducted in Kochere district, Gedeo zone from Jan 27-Feb 10/2016

Study design

Descriptive cross sectional study design has been used

Data collection techniques and tools

Data was collected by using comprehensive checklist through face to face interview of responsible officials and experts in respective organizations as well as review of available records in health offices and health institutions, Finance, Education, Agriculture, Culture & Tourism, Water and woreda administration office. Likewise, review of publications and literatures about different standards and also observations were used as a complement of data collection.

Data quality assurance

In order to get reliable data, face to face interview was carried out using comprehensive checklist, available records such as annual reports were thoroughly reviewed and repeated visit was done where officials or professionals were absent at the time of data collection.

Ethical consideration

Letter of support was written from regional health bureau, department of public health emergency management to Gedeo zone health department then to Kochere woreda health office finally the woreda health office wrote official letter to all sectors where data can be collected.

4.1.5 Results

Geography and climate

The district is found in the altitude range from 1710 to 2573 meters above sea level. The average annual rain fall and temperature is between 900 and 1050 mm and 25-31^{0}c respectively. 74% of the district is found in weinadega and 26% is in dega agro-ecological zones. The total area of the district is 250.45 km^2 (25,045 hectare) with population density of 702 persons per square kilometer. Sixty-nine percent (69%) of the land mass is suitable for farming. Around 17,433 hectare of the land is covered by different kinds of agricultural products. The major agricultural product is coffee which covers 78.4% (13,677 hectare) of the cultivated land. The main agricultural products that grow in the district are coffee, enset, maize, wheat & barley.

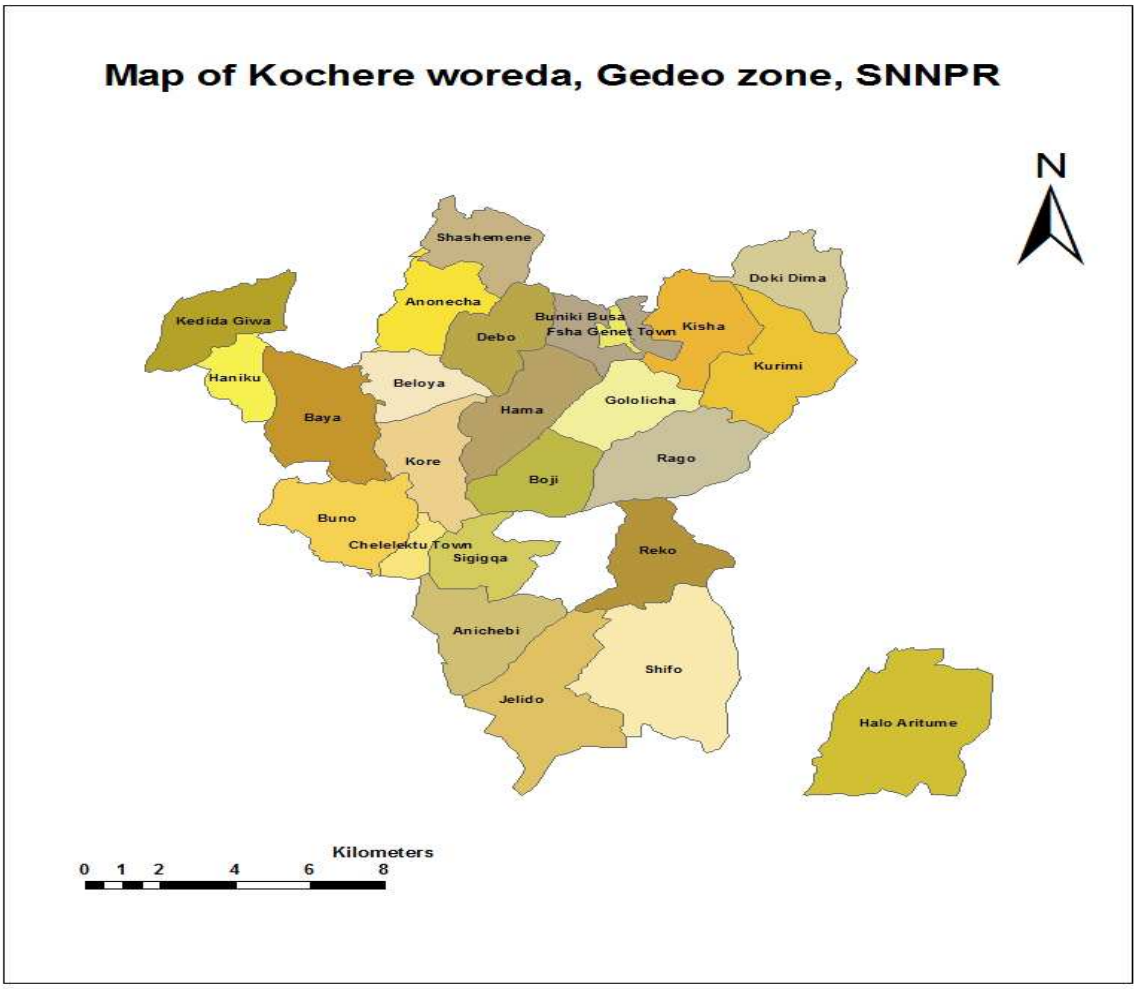

Figure 24: Map of Kochere woreda Gedeo zone, SNNPR, Feb/2016

Table 4: Types of agricultural products that grow in kochere woreda, 2016

S/N	Type of products	Area covered (hectare)	Percent
1	Coffee	13677	78.4
2	Enset	3351	19.2
3	Maize	24	0.13
4	Wheat	32	0.18
5	Barley	12	0.06
6	Roots & tubers	162	0.9
7	Fruits & vegetables	175	1.0

Political and administrative organizations

The district is bounded by, in the north Yirgachefe district, in the south Oromia region, in the east Gedeb district and in the west again Oromia region. The district has 26 kebeles of which 3 are urban and 23 are rural.

Population and population structure

Total population of the district is 175,962 of which total number of males and females are 93,268 and 82,694 respectively. It is estimated that 702 people are living in a square kilometer of land. Sex ratio is 1.12. From total population 14,330 males and 12,116 females totally 26446 (15%) people reside in the three urban kebeles.

Table 5: Number of people and sex ratio by kebele, Kochere district, 2016

s/n	Name of the kebele	Number of males	Number of females	Total population	Sex ratio
1	T/dima	1741	2456	4197	0.70
2	Kurumi	2155	3165	5320	0.68
3	Gololcha	3412	2514	5926	1.35
4	Rego	4027	3582	7609	1.12
5	Kisha	3512	2794	6306	1.25
6	b/bussa	2074	1099	3173	1.88
7	Hamma	5462	3427	8889	1.59
8	Debo	3714	4037	7751	0.91
9	Boji	3752	3288	7040	1.14
10	Kore	3260	3376	6636	0.96
11	Buno	3438	2912	6350	1.18
12	Hanku	2453	2635	5088	0.93
13	Baya	4811	3642	8453	1.32
14	k/giwi	2885	2369	5254	1.21
15	Shashemene	3480	2862	6342	1.21
16	Ononcho	3812	4417	8229	0.86
17	Biloya	3033	2706	5739	1.12
18	Reko	4571	3806	8377	1.20
19	Sisota	1539	383	1922	4.01
20	Sigiga	2213	2238	4451	0.98
21	Shifo	7708	7489	15197	1.02
22	Jeldo	3127	3270	6397	0.95
23	Anchebi	2759	2111	4870	1.30
24	Chelelektu 01	3859	2445	6304	1.57
25	Chelelektu 02	6122	7139	13261	0.85

26	F/genet	4349	2532	6881	1.71
	26	**93,268**	**82,694**	**175,962**	**1.12**

Education and school health

Regarding to education and school health, in the 2008 EFY, there were 33 primary schools (schools with grades 1-8 are 25 and schools with grades 1-4 are 8) in the district. There are 4 secondary schools (schools with grades 9-10 are 3 and grades 11-12 is 1). There is no tertiary school in the district. Of the school community, total number of teachers is 736, males are 634 and females are 102. The total number of students (all type) is 46,840. Males are 26,212 and females are 20,628. Schools with water supply, functional latrine and HIV and other health related clubs are 9, 9 and 25 respectively. There is no reliable data to calculate literacy ratio.

Table 6: Number of students and teachers by type of school in Kochere district, 2016

s/n	Type of school	N. of schools	N. of teachers			N. of students		
			Male	Female	Total	Male	Female	Total
Governmental								
	Grades 1-4	8	23	13	36	7898	5947	13845
	Grades 1-8	25	521	70	591	15970	13606	29576
	Grades 9-10	3	77	18	95	1628	1629	3257
	Grades 11-12	1	13	1	14	69	96	165
	Sub total	37	634	102	736	25565	21278	46843
Private								
	Pre-school	2	8	7	15	254	180	434
	Grand total	39	642	109	751	25819	21458	47277

Communication and utilities

All health facilities and kebeles are accessible for transportation but, only 2 kebeles and 2 health facilities have telecommunication facility. Therefore, only 7.6% of kebeles and 33% of health facilities have access to telecommunication. As far as electric power and water supply are concerned, out of 26 kebeles only 8 have electricity which is about 30% and out of 6 health centers in the district only 3 have electricity with the coverage of 50%. Two of the 6 health centers have water supply which is 33%. It was difficult to determine coverage of safe drinking water in each kebele and data obtained from different government sectors were controversial.

However, mining and energy office of the district said that in urban kebeles the coverage is 44.9% whereas it is less than 10% in rural kebeles. There are also more than 6 kebeles without any safe drinking water establishments.

Disaster status of the area

No data were found about disaster situation in the area despite the repetitious effort made to communicate the responsible body. Concerning public health emergency, in 2007EC there was outbreak of measles virus in four kebeles namely shifo, biloya, buno and kore. A total of 25 cases were recorded and there was no death.

Health services

Regarding to types and number of health facilities, there are six health centers, 23 health posts. No hospital or other paramedical health facilities from the government side but, there are 6 private clinics and 7 drug stores/rural drug venders.

Table 7: Number of health workers and administrative staffs in the district, 2016

s/n	Type manpower	Male	Female	Total
1	Physicians	0	0	0
2	Health officers	7	2	9
3	Laboratory technician/technologist	13	3	16
4	Pharmacy technician/pharmacist	8	1	9
5	Nurses all type except midwifes	60	18	78
6	Midwifes	0	11	11
7	X-Ray technician	0	0	0
8	ENHS	2	2	4
9	Health extension workers	0	54	54
	Sub-total	90	91	181
10	All administrative staff	49	23	72
	Grand total	139	114	253

Table 8: Ratio of health facility and professional to population, Kochere district, 2016

s/n	Description	Number	Ratio	Standard
1	Hospital: population	0	No hospital	1:250,000
2	Health center: population	6	1:29,327	1:25,000
3	Health post: population	23	1:7650	1:5,000
4	Physician: population	0	No physician	1:100,000
5	Health officer: population	9	1:19,551	1:10,000
6	Nurse: population	78	1:2256	1:5,000
7	Midwife: population	11	1:15,996	1:10,000
8	HEW: population	54	1:3258	1:2,500

Table 9: Top ten leading causes of OPD visit in 2007EFY (adults), Kochere district, 2016

s/n	Type of disease	# of cases	%
1	Acute febrile illness(AFI)	2,743	13.96
2	Pneumonia	2,654	13.5
3	Other or unspecified infectious and parasitic diseases	2,292	11.66
4	Diarrhea (non-bloody)	2,117	10.77
5	Helminthiasis	1,616	8.22
6	Typhoid fever	1,393	7.09
7	Trauma (injury, fracture etc.)	1,329	6.76
8	All respiratory diseases	1,252	6.37
9	Urinary tract infection	910	4.63
10	Infections of the skin and subcutaneous issue	399	2.03
	Total of the above causes	16,705	85.03
	Total of the other causes	2,941	14.96
	Total of the all causes	19,646	100

Table 10: Top ten leading causes of OPD visit in 2007EFY (children < 5 years of age), Kochere district, 2016

s/n	Type of disease	# of cases	%
1	Pneumonia	1561	31
2	Diarrhea (non-bloody)	1556	30.9
3	Other or unspecified infectious and parasitic diseases	357	7.09
4	All respiratory diseases	290	5.76
5	Helminthiasis	258	5.12
6	Diarrhea with dehydration	219	4.35

7	Acute febrile illness(AFI)	175	3.48
8	Infections of the skin and subcutaneous issue	108	2.14
9	Diarrhea with blood (dysentery)	88	1.75
10	Otitis	77	1.53
	Total of the above causes	4689	93.13
	Total of the other causes	346	6.87
	Total of the all causes	5035	100

Health sector expenditure and financing

It was tried to find out the amount of budget that had been allocated from the woreda administration to the district health office for the last five years but there was no any relevant documentation that tells about the budget allocated in the year 2004-2007EC. However, in the year 2008EC the district has got 53,440,558 birr of this 7,516,084 birr is allocated to the district health office which is 14 percent of the total budget.

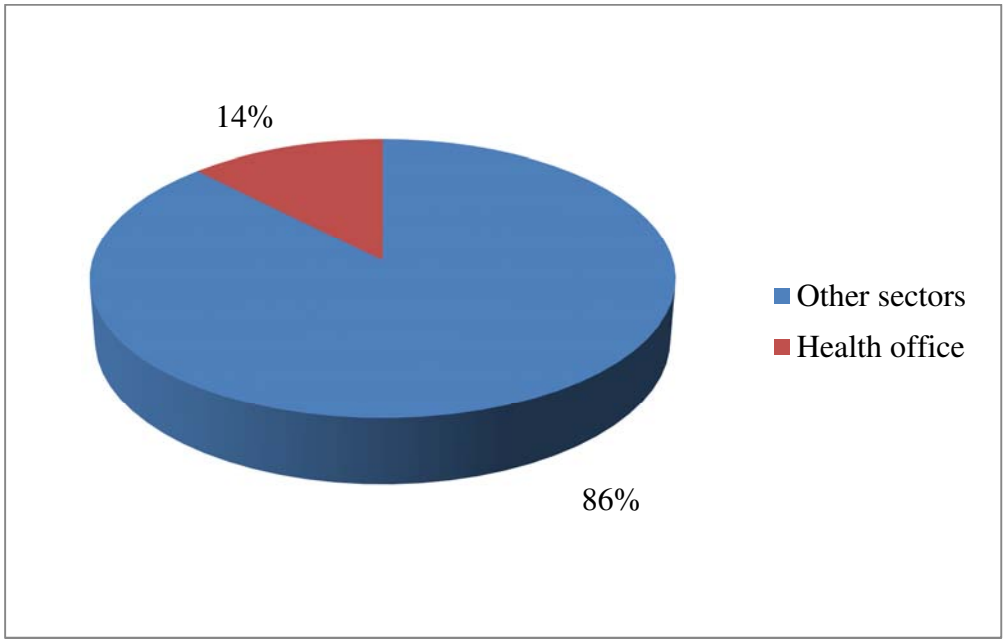

Figure 25: Amount of budget allocated for health office by woreda administration, 2008EC

Table 11: MCH and EPI coverage of the district, 2008EC

s/n	Description	Coverage	Remark
1	ANC coverage	64%	
2	PNC coverage	59.5%	
3	BCG coverage	92%	
4	Measles vaccine	85.6%	Dropout rate=9%

5	OPV	82%	
6	Rota virus	105%	
7	Penta 1	106.9%	
8	Penta 2	105%	
9	Penta 3	105.46%	Dropout rate=2.4%
10	Fully vaccinated coverage	89.74%	
11	Contraceptive acceptance rate	64.7%	
12	TT_2 coverage for pregnant	104.59%(PAB)	
13	TT_2 coverage for non-pregnant	-	non-pregnant women were not vaccinated due to shortage of TT vaccine

Environmental sanitation

The total number of house hold with latrine is 31,870 which is 94% of the house hold have latrine. There are 33,710 house hold in the district.

All exempted health services are available as stated by the national health system for primary health care unit.

Endemic diseases

Among 26 kebeles in the district, 13 (50%) kebeles are malarious. On average, around 300 cases were seen at out-patient department of the health centers each year but, malaria is out of the list of 10 top leading causes of OPD visit both in adults and under 5 children in 2007EFY. The coverages of ITN and IRS are 100% and 54%, respectively.

Table 12: Type of malaria by age category & coverage of intervention in 2007EFY, Kochere district

s/n	Description		Number of population	
1	Number of malarious kebeles		13 (50%)	
2	ITN coverage		100%	
3	Coverage of insecticide chemical spray		54%	
4	Total number of cases/year		297	
5	Age category		< 5 years >	5 years
6	Cases treated based on lab finding	PF	0	87
		PV	0	205
		Mixed	0	5

TB/Leprosy status of the district

Even though there was problem of getting complete data on the situation of TB and Leprosy program, the limited data obtained from district health office had revealed that from 277 eligible people who were expected to have pulmonary tuberculosis only 30 people had smear positive TB which resulted in TB detection rate of 10.8%. Regarding to TB treatment success rate and TB cure rate, from 77 TB patients registered in 2006EC 31(40%) patients had succeeded TB treatment until the end of 2007EFY and also only 25 patients which are 32% of 77 TB patients registered in 2006EC have been cured from tuberculosis. Unfortunately, TB treatment completion rate and TB defaulter rate had not been determined because of unavailability of data despite vigorous attempt to get any documentation on it. Two patients died while they were on TB treatment. There was no report concerning Leprosy cases in the district throughout the year.

HIV/AIDS interventions

Of the total 7289 people tested for HIV (all type of intervention that is VCT, PIHCT and PMTCT) 55 clients were found to be HIV positive resulting 0.75% HIV positivity rate. The number of eligible people for PIHCT in the year was 65,980 but the achievement was very low only 3,001 with the coverage of 4.5%. Hence, many people didn't know their HIV status even though they have visited health facilities for their different health related issues. Pertaining to VCT service, among 85,988 clients eligible for VCT 991 clients have got the service with the coverage of 1.15%. Relatively the performance of PMTCT was encouraging but, the activity was not properly planned. For example, the proportion of pregnant women who tested for HIV to get PMTCT service were 3,297 from 5,707 expected pregnancies but, the annual plan was only 24 women. However the coverage from the eligible was 57.7%. Number of PLHIV ever started on ART was 2,191 of planned (3,152) with the coverage of 69.5%.

Table 13: Status of HIV testing in the district in 2007EC

s/n	Activities	# of people tested for HIV	# of HIV positives	HIV positivity rate
1	VCT	991	5	0.5
2	PICT	3,001	34	1.13
3	PMTCT	3,297	16	0.48
4	Total # of people tested for HIV	7289	55	0.75

Nutrition

Table 14: Number of nutrition intervention programs and sites in the district, 2007EC

s/n	Type of food intervention program	Number of programs/sites
1	OTP sites	25
2	TFU program	1
3	TSF program	1
4	CBN program	23 kebeles
5	EOS program	CHD in 23 kebeles

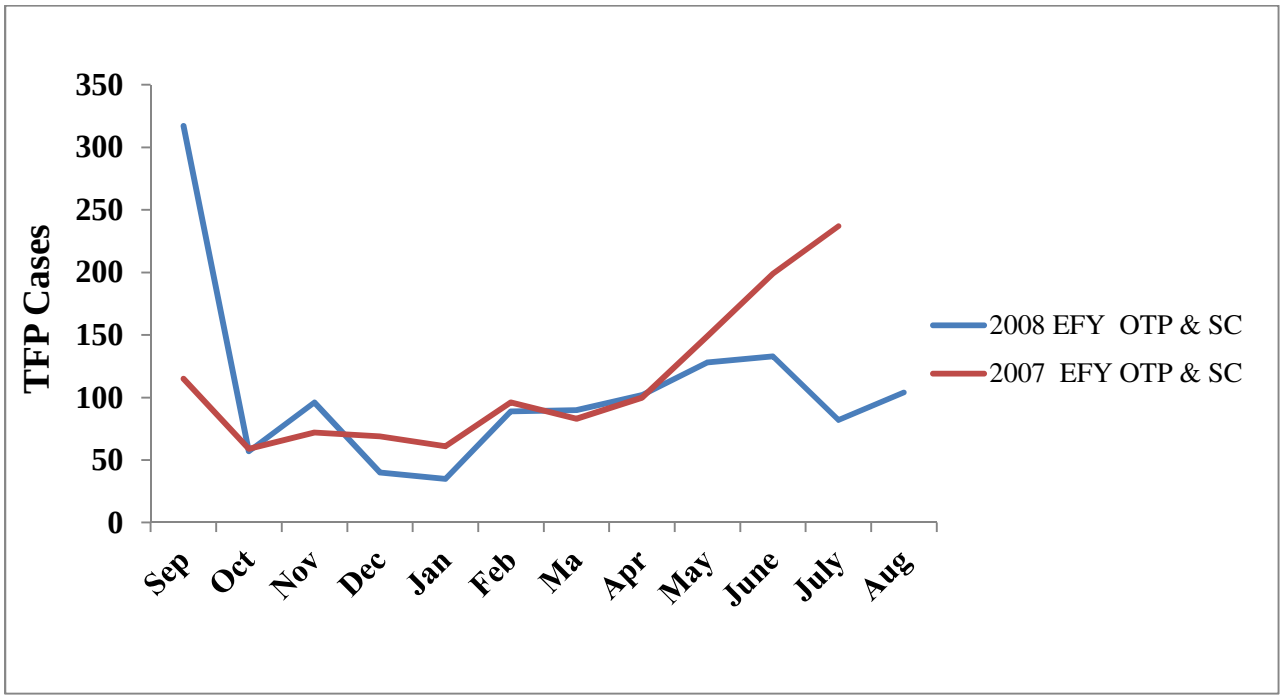

Figure 26: TFP (OTP + SC) of kochore Woreda 2007 EC vs 2008 EC

The head of district heath office was interviewed about availability of essential drugs, opinion of major health problems in the district and solutions for the identified problems. The health office head said that all types of essential drugs are available most of the time in most of the health facilities. The health service coverage of the district is about 95 % as mentioned by the head of woreda health office.

Major public health problems in the area as described by the head are typhoid, typhus, pneumonia and diarrheal diseases which are related with poor sanitary condition rampant in the district. Strengthening hygiene and sanitation activities and improving the accessibility of safe

drinking water to the people as well as public facilities in the area will be a solution for the prevention and control of these public health problems.

4.1.6 Discussion

Schools are among the institutions where the issue of public health has got due attention since considerable part of the general population is concentrated in the education system. However, health related activities of schools in kochere district are very minimal. Among 37 schools (all type) only 24% (9 in number) of the schools have water supply and functional latrine.

Data obtained from the 2007EC Health and health related indicators showed that percentage of health centers with water supply are 61.2% in SNNPR(1). But, only 33% of health centers which are 2 of 6 health centers have water supply in the district. It is not only the health facilities that have problem of safe drinking water but also all the kebeles (both urban and rural) have difficulty of getting access to safe and potable water supply.

The health professional density per 10,000 people is 0.51, 0.62 and 4.43for health officers, midwifes and nurses (all type) respectively. The density for health officers and midwifes is below the national as well as the regional indicator reported in the same year but, the density for nurses is more or less the same with the national indicator.

Regarding to public health facility to population ratio, the ratio of health center and health post is 1:29327 and 1:7650 respectively, which is below the standard as well as below reported public health facilities regionally and nationally.

There is good allocation of budget for the health sector from district administration office which is higher than nationally allocated budget but slightly lower than regional budget. It was 14% of total budget allocated for the district.

National coverage of ANC, PNC and contraceptive acceptance rate was 97%, 90% and 69.9% respectively. In the district these all indicators are lower than the national and regional (100%, 96% and 72.4%) performance that needs improvement. Although the coverage of fully immunized children is encouraging the district was frequently threatened by outbreak of measles.

TB detection, treatment success rate and cure rate of the district is by far inconsistent with the national and regional performance in the same year (2007EC). TB detection, treatment success

rate and cure rate of the district is 10.83%, 40.26% and 32.47% whereas the national is 67.3%, 92.1% and 77.9% respectively. In the era of MDRS TB low treatment success and cure rate is not tolerable. Furthermore, there is problem of documentation. For example, there was no information about tracing mechanism of TB patients who were defaulted from treatment.

Limitations of the study

Obviously, the study was predominantly dependent on secondary sources of data which is the primary intention was for administrative purpose. Important data were not found such as leading causes of admission and death in order to measure specific mortality rates. Therefore it was very difficult to harmonize the objective of this study with secondary data collected from different administrative sectors in the district.

4.1.7 Conclusion

Shortage of infrastructure like facilities of water and power supply and also shortage of telecommunication facility have exposed the community in the district to various health and health related difficulties. Some of the maternal health service coverages such as ANC, PNC and contraceptive acceptance rate are lower than the national and regional achievements in 2007EC. Integration of TB and HIV services is not well done. More importantly, TB detection rate, treatment success rate and cure rate are very low from what is expected. Diseases related with poor hygiene and sanitation had been among the 10 top causes of morbidity.

Sufficient data were not available in the district concerning the situation of community water supply and important indicators of TB & HIV programs. Combined with poor management of data, these problems have a great influence on the process of prioritization of public health problems and events.

4.1.8 Recommendation

- Schools should be equipped with hygiene and sanitation services like water supply and functional latrine.
- The coverage of safe drinking water should be improved both in the health facilities and in the communities especially communities living in rural kebeles
- Communication and power supply should be available in all health centers by the woreda administration in order to enhance quality of health service delivery.

- Low performed maternal and child health care services should be strengthened.
- The principles of TB detection and treatment should strictly be followed by all health facilities and also strong defaulter tracing mechanism should be in place.
- The woreda health office should give great emphasis on data management and communication system in such a way it improves early detection of problems when it occurs.
- On job training should be given to officers working on planning, monitoring and evaluation core process as well as members of the management committee strictly focusing on how to plan, how to calculate eligible from total population and so on.
- The health office and health facilities should give due emphasis on data management, ongoing data analysis and use of information obtained from the process of data analysis for decision making locally.
- Finally, consistent and check list supported supervision in all levels that is from ZHD to the health post then, to the community level should be done based on predetermined schedule.

4.1.8 References

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2. Kochere woreda administration sectors
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Chapter 5: Scientific Manuscript for Peer reviewed Journals

5.1 Outbreak of Scabies in Halaba Special District, Southern Nation Nationalities and People's Regional State, Ethiopia, 2016-A Community Based Case-Control Study

5.1.1 Abstract

Background: Scabies is an allergic response to an infestation of the skin by the scabies mite. Lymphadenopathy, acute post-streptococcal glomerulonephritis and rheumatic fever are complications related with scabies due to secondary bacterial infection. World health organization listed the problem as one of the neglected tropical diseases. Regional health bureau was notified about the outbreak on September 24/2016. Investigation and control activities were started on October 13/2016.The aim of the investigation was to identify source, control the outbreak and assess risk factors associated with it.

Methods: We employed a 1:2 unmatched case-control study design. Patients were recruited from temporary treatment sites. Controls were recruited from the nearby community by house to house visit and ensuring no scabies patient in the family. Additionally, line listing of cases was done to carry out descriptive analysis. Structured questionnaire was used to collect data.

Result:

Descriptive: The outbreak started in March and ended in October 2016. We line listed 1958 (males 1092 and females 866) patients with scabies. One thousand two hundred eighty eight (65%) were less than 15 years of age. Age ranged from 2 month to 84 years with median age of 12 years. Overall attack rate was 4%. The outbreak affected 15 kebeles (Lowest government structure) from the total of 84.

Analytical: We enrolled 100 cases and 200 controls. History of contact with a patient of scabies ($P<0.00001$) and age less than 18 years ($P<0.0001$) were among risk factors associated with the outbreak.

Conclusion: Religious boarding school was implicated as a source of the outbreak. Community mobilized and outbreak controlled according to the guideline of scabies. We strongly recommend the Health Bureau to incorporate scabies surveillance in the integrated disease surveillance system of the region.

Key words: Case-Control, Scabies, Halaba, Surveillance

5.1.2 Introduction

Scabies is an allergic response to an infestation of the skin by the mite Sarcoptes scabiei var hominis (1). This ancient disease of the skin has been existed for the past 2500 years causing a great deal of morbidity on mankind and currently affects 300 million people annually worldwide. It has been listed as neglected tropical disease by the World Health Organization (WHO) in 2013. Public and private sector expenditure on this problem, the lack of attention at local, national, and international levels, and the higher incidence of this infestation amongst the poor are some of the reasons why WHO have considered the problem as one of neglected tropical diseases(3).

Mode of transmission is through direct skin-to-skin contact, and 15–20 minutes of skin-to-skin contact is generally required. Overcrowding and sexual contact increases transmission. Sharing of clothing or bedding and towels can transmit the mite—especially if used immediately after the infested person. Asymptomatic patients, or patients with minimal symptoms, can unknowingly transmit mites. In a healthy patient, the mite can survive up to 3 days off the host. In contrast, mites in crusted scabies can survive up to 7 days off the host which increases the risk of infestation (2). In contrast to typical scabies infestations, persons with crusted scabies are highly contagious because of the large number of mites, skin sloughing, and increased mite survival. Scabies predisposes affected children to sepsis and other non-suppurative invasive infections and rheumatic fever (5). Outbreaks of APSGN usually coincide with scabies outbreaks, which can contribute to the development of chronic kidney disease and subsequent renal failure in adulthood (6). Scabies infestation has a negative impact on the quality of life for infested individuals (similar to that of psoriasis) resulting in substantial stigmatization and ostracism (7). Since the usually affected age group of people is children of school age, the condition has a great influence in the academic performance of students because they cannot follow class room instructions attentively thinking their situation resulted from relentless itching.

Avoiding prolonged skin-to-skin contact with people who have conventional scabies and even brief skin-to-skin contact with people who have crusted scabies is the initial step among prevention strategies of scabies outbreak. Contact with items such as clothing and bed linens that have been used by an infected person should be avoided, especially if the person has crusted scabies (5).

Therefore, the objectives of this outbreak investigation were to find out risk factors associated with the outbreak, to describe the outbreak in terms of time, place and person and find ways to control the outbreak within short period of time before affecting large number of people.

5.1.3 Materials and Methods

Study area

The outbreak investigation was conducted in Halaba special woreda- one of 15 zones and 4 special woredas in southern nations, nationalities & people's regional state (SNNPR) situated in the main road between Shashemene and Wolayta sodo. The woreda has 84 administrative kebeles(79 rural & 5 urban kebeles) with a total population of 318,177 of which the number of males and females is 155,907 and 162,270 respectively. The total number of health workers (all type except health extension workers-HEW) is 395. There are 142 rural & 8 urban HEWs totally 150. Concerning the number of health facilities, the woreda has 2 hospitals (1 general &1 primary), 9 health centers and 79 health posts with health service coverage of 95%.

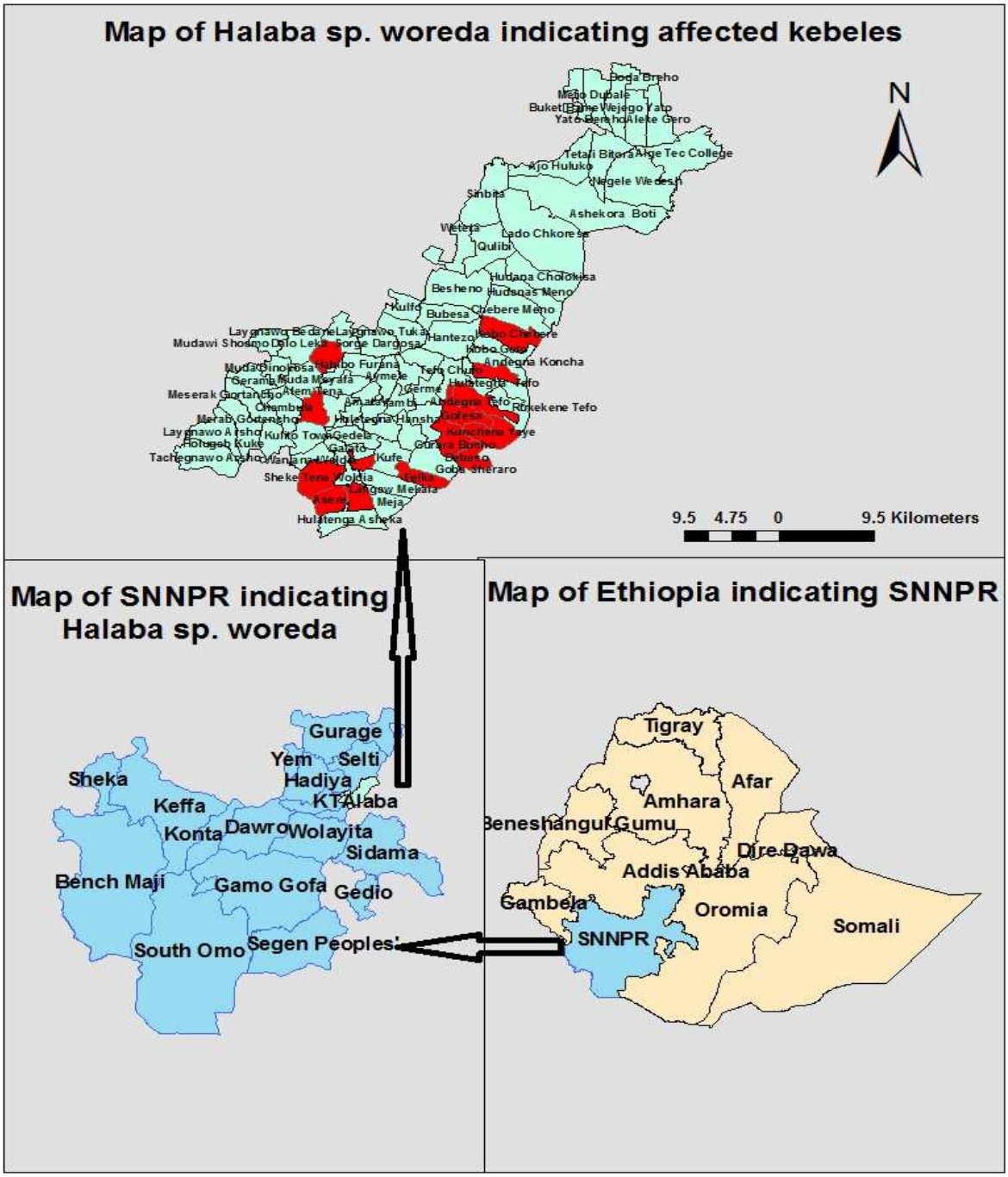

Fig.1: Map of Halaba special worda illustrating kebeles with scabies outbreak, 2016

Study design

Unmatched case-control study design had been employed

Source population

All people living in the kebeles affected by outbreak of scabies

Study population

Patients with active infestation by scabies and their controls living in the same area of residence as case patients but, who are not family members of case patients are targeted as study population.

Eligibility criteria

Patients who fulfil the standard case definition of scabies and with the disease onset of 2 weeks prior to the date of data collection were included in the study.

Standard case definition of scabies

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

Sample size determination

The sample size was determined using Epi info version 7 software by taking the following assumptions:-

Confidence interval =95%, Power =85%, Percent of controls exposed = 15%, Odds ratio =2.53

Percent of cases exposed =30.9%. Then the final sample size was 100 cases and 200 controls = 300 study participants.

Sampling technique

Non-probability purposive sampling technique was used in a ratio of 1:2 cases and controls. Selection had two dimensions. First, we selected three kebeles where the outbreak had started early and with high number of cases. Then patients were selected and interviewed at temporary treatment sites (mainly health posts) by ascertaining the eligibility criteria mentioned above. Finally, controls were selected from villages where cases come from. In both sites participants were enrolled in to study decisively until the target given to data collectors had been reached.

Data collection method

Structured questionnaire was used in the process of data collection which had contents of socio demographic information, clinical features of the disease and risk factors. The total number of sample was divided in to five data collectors and daily target was set that is interviewing 15 participants by one interviewer each day. There were two locations where patients with scabies and their controls were selected and interviewed. One is temporary treatment sites where Mass Treatment Administration (MDA) was conducted and another is the villages where controls selected and interviewed by trained data collectors house to house. First, data collectors interviewed patients with scabies at treatment sites. Then, having address and other information of personal variables like age and sex of interviewee they had searched for appropriate controls in the villages where the patients come from. The data collectors not only interview the controls but also observe whether the interviewee is free of the disease under investigation or not. Additionally, they make sure that the control is not family member of the case and no one in the household had the disease.

Operational definition

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

Large Family: A family which has six or more family members in a household

Data analysis

Data was entered and analyzed by Epi-info 7 and Excel 2010 soft wares. First we carried out bivariate analysis and calculated crude odds ratio, confidence interval and p-values. Then, multi variate analysis was done using logistic regression.

Data quality management

To ensure the quality of data five health workers who have educational level of diploma and above were selected from health centers. Training was given about data collection instrument and the characteristics of epidemiologic study design (case-control) that we were going to

implement. Throughout the period of data collection (October 15-18/2016) daily follow up and evaluation of data collection process was done.

Ethical consideration

In order to keep dignity of the participants, information indicating the identity of study subjects like name of interview is excluded from the questionnaire.

5.1.4 Results

Descriptive findings

A total of 1958 (1092 males and 866 females) cases of scabies have been line listed and descriptively analyzed based on the date of disease onset starting from January 07/2016 up to October 01/2016 referring data obtained from 15 kebeles that were heavily affected by outbreak of scabies. Even though total number of people infested by scabies mites exceeds 30, 000, after October 01/2016, cases were not line listed but, only information about total number of cases was updated each day for the purpose of monitoring public health intervention activities and logistics issues. The result of analysis indicates males are more affected than females (males 55.7% and females 44.3%). Regarding to age group, people who are less than 15 years of age account 65% (1288 in number) of the disease burden. Age ranged from 2 months to 84 years but, the median age was 12. The interquartile range was 7.75 and 20.75 that is 50% of cases were between the age of 8 and 21 years.

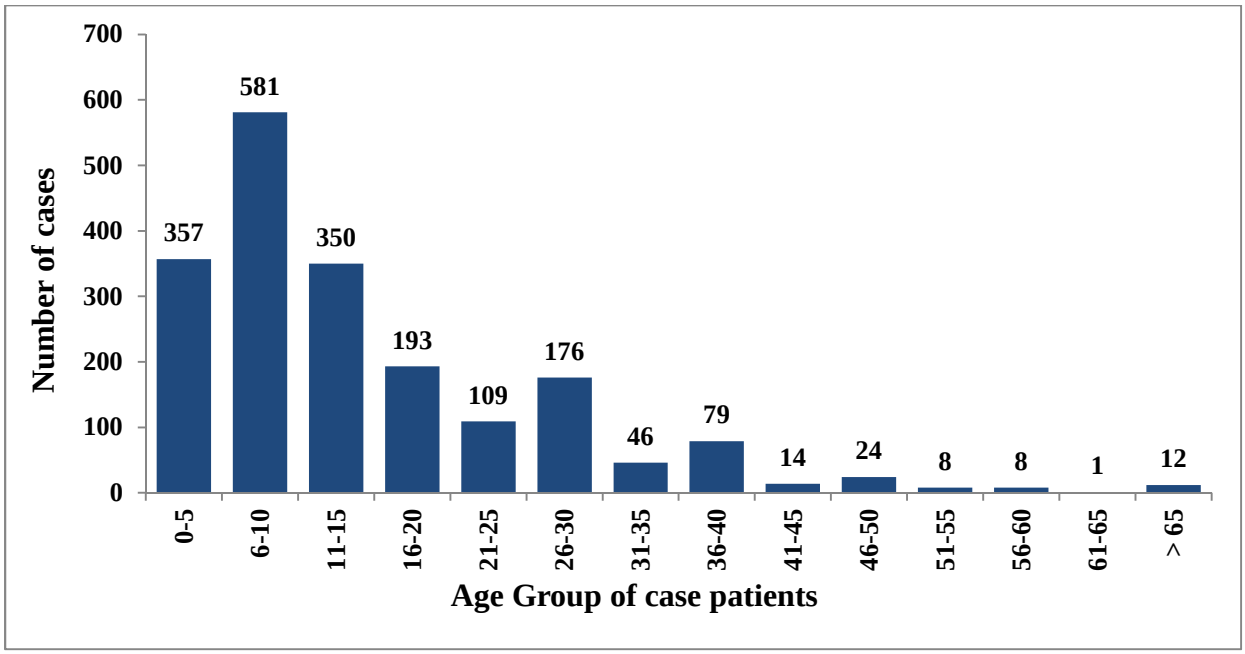

Fig.2. Distribution of cases of scabies by age group, Halaba special woreda, October 2016

The overall attby attack rate for the 15 kebeles included in the line list is 4% which ranges from Kunche yeye kebele with the highest attack rate (17.9%) to Kobo chobare (0.3%) with the lowest attack rate.

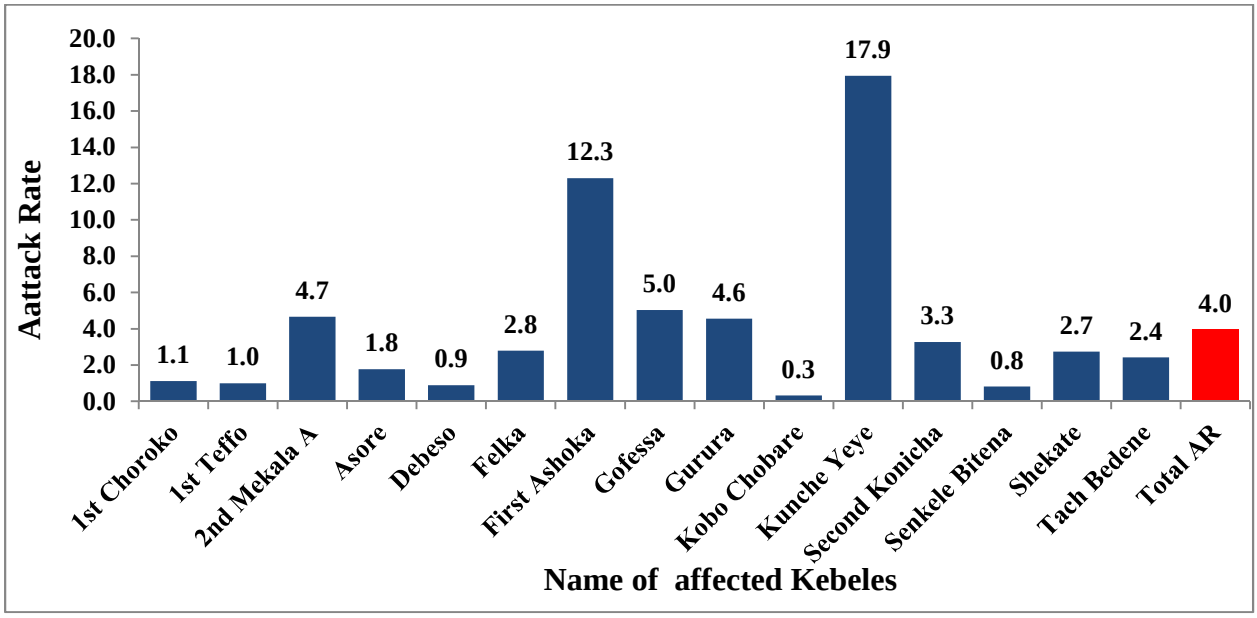

Fig.3. Attack rate of kebeles affected by scabies outbreak, Halaba special woreda, October 2016

When we compare the actual number of cases with that of corresponding attack rate of each kebele the order of rank doesn't change because there is no significant variation in the total number of population of the kebeles.

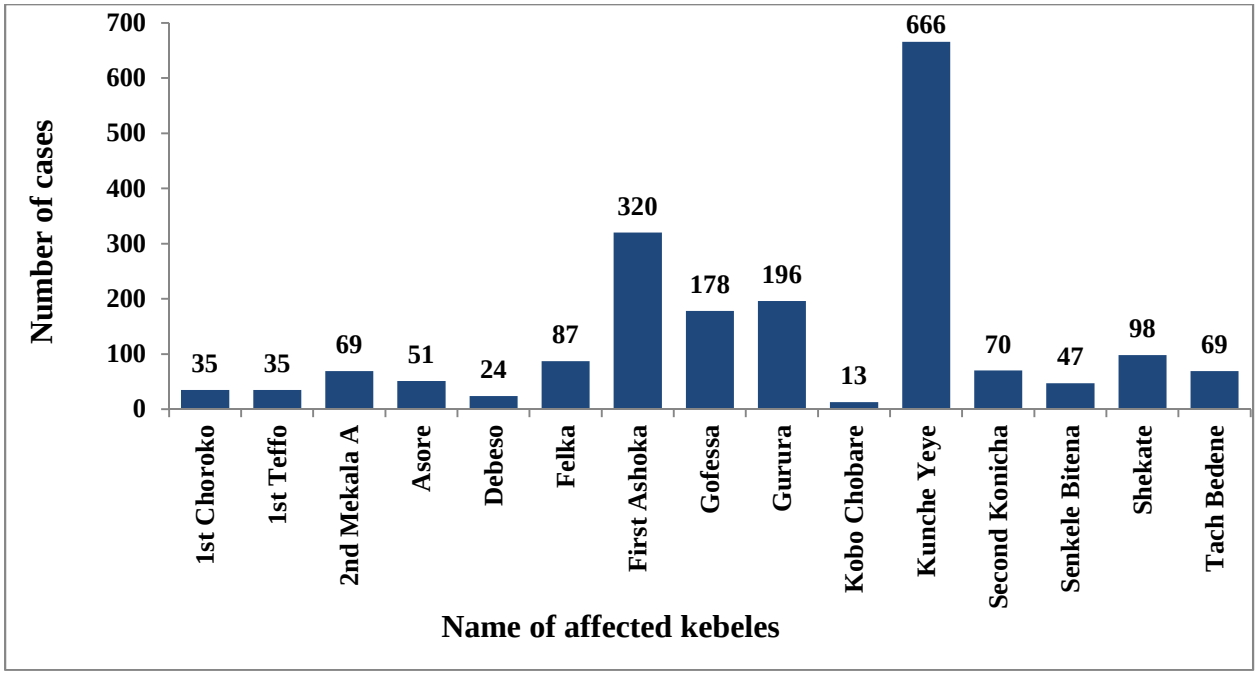

Fig.4. Distribution of cases of scabies by affected kebeles, Halaba special woreda, October 2016

The epidemiologic curve illustrated below shows number of cases with different peaks and falls over the period of more than 8 months. The outbreak had reached its highest peak in the epidemiologic week of 35 roughly in middle of August and in the beginning of September.

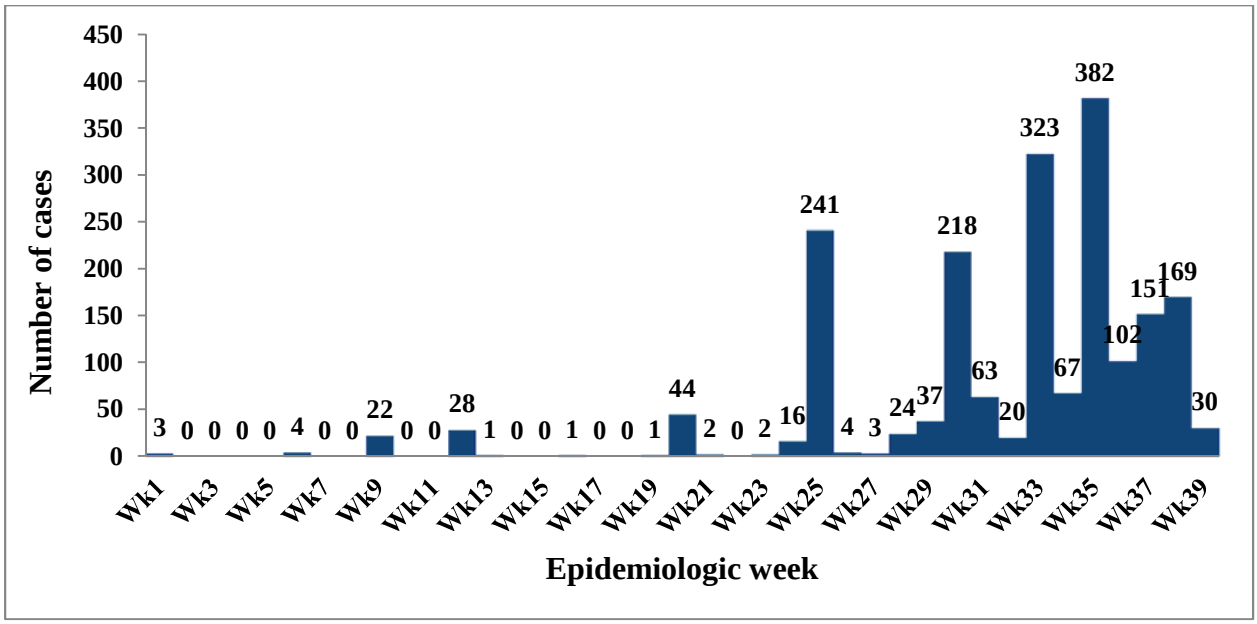

Fig.5. Epidemic curve showing trend of cases based on epidemiologic week, Halaba special woreda, Oct/2016

Analytical study

We conducted unmatched case control study design. 100 cases and 200 controls were selected in a ratio of 1:2. Case of scabies was defined as any person who has consistent sign and symptoms of scabies particularly distribution of rash over the patient's body and intense itching during the night. Controls were defined as any person who has similar characteristics as that of cases except absence of the disease. Among the study participants females were 105 and males were 195. The median age was 15 with interquartile range of 9 and 29 years.

Among the risk factors analyzed using bi-variate analysis, history of skin to skin contact with a patient of scabies OR= 16.35, 95% CI (8.93 - 29.92); sharing clothes with patient of scabies OR= 5.03, CI (2.85 – 8.86); living in a flood affected area OR=5.42, CI (2.37 – 12.40) and People less than 18 years of age OR= 2.05, CI (1.23 – 3.40) have statistically significant association with the occurrence of the outbreak. Having large family size (more than 6 members in a family) OR= 1.07, CI (0.64 – 1.78) and being male OR= 0.93, CI (0.56 – 1.54) have no statistically significant association. However, use of soap OR=0.18, CI (0.07 - 0.45) has statistically significant association which is protective. All the variables which have statistically significant association in bi-variate analysis have also the same association in multi-variate analysis. See logistic regression table below.

Table 2: Result of multi- variate analysis, Halaba Special Woreda, SNNPR, Oct/2016

S/n	Variables	Case				Control				COR	AOR	95% CI	P-Value
		Yes	%	No	%	Yes	%	No	%				
1	Male	64	64	36	36	131	65.5	69	34.5	0.93	1.24	0.55-2.78	0.5999
2	Age < 18 years	69	69	31	31	104	52	96	48	2.05	14.7*	4.91-44.31	0.0001
3	Skin to skin contact	68	68	32	32	23	11.5	177	88.5	16.35	23.9*	10.25-55.96	0.0001
4	Sharing of clothes	44	44	56	56	27	13.5	173	86.5	5.03	4.29*	1.87-9.86	0.0006
5	Living in a flood affected area	93	93	7	7	142	71	58	29	5.42	7.40*	2.37-23.08	0.0006
6	Usage of soap	82	82	18	18	192	96	8	4	0.18	0.07*	0.02-0.26	0.0001
7	Family size (> 6)	68	68	32	32	192	66.5	8	33.5	1.07	0.84	0.36-1.94	0.6968

Note: figures with asterisk show statistically significant association

Public health interventions

Training was given for health extension workers, health professionals and coordinators of public health interventions about scabies outbreak prevention & control guideline, treatment of scabies and mass drug administration (MDA) campaign. Kebeles with greater than 15% attack rate were identified and MDA has been conducted in those selected kebeles in addition to treating cases & contacts in less affected kebeles. Regarding social mobilization & awareness creation of the public, key issues of intervention like what to do before taking scabicidal medication, how to apply permethrin cream over their body, the importance of treating all contacts of scabies patients and the need for avoiding contact with a person infested by scabies mites were some of the information addressed to the community. Schools, mosques, market places and any mass gatherings were used as a medium to transmit the aforementioned health information. Pertaining to surveillance and contact tracing, the existing system of active surveillance has been revitalized and a system for daily update of cases was established throughout kebeles in the woreda.

Findings from key informant interview

We had interviewed five key informants. Three were kebele administrators from highly affected kebeles, one leader of Islamic religion and one health extension worker. They said that they had

never seen such outbreak in their life time even though very few cases of scabies were usually existed in some parts of the woreda. As explained by the key informants the cases of scabies had started to show up after the return of students of religious teaching from Bale zone, Oromia regional state where a number of Muslims who live in Halaba went to attend 3 to 4 year's training. After getting this information we had visited one of the mosques which had religious boarding school in it. At the time of visit there were 39 students. Among them 29 (74%) were found to be patients of scabies.

5.1.5 Discussion

The number of scabies cases was unacceptably high because of delayed notification of outbreak and reporting of cases. The long duration of the outbreak indicates weakness of the public health surveillance system of the woreda as evidenced by very late notification of the outbreak. People in the age group of 6 up to 15 years are more affected than any age group in the continuum. This is because most of them are students of primary school where the chance of infestation with scabies mites is very high through direct skin to skin contact. Concerning to schools there is one important risk factor peculiar to the community of the woreda that is religious teaching in the mosques called 'Deressa'. Students are adolescents who were recruited to study the holly book (Kuran) living in a group in the houses particularly built for this purpose inside the compound of mosques. When we had visited some of the mosques, we were able to observe higher proportion of students who were case patients of scabies. In the study conducted in Doga-temben district, Tigray regional state, the most affected age group was found to be children less than 5 years of age (8). However, our study showed that children in the age group of 6-10 years were most affected. Moreover, males are more affected than females even though it has no statistically significant association. In contrast to this, in a study conducted in Patients Visiting Liaquat University Hospital of Pakistan, scabies was more frequent in females with non- statistically significant association (9)

The epi curve was created by considering epidemiologic week as time factor because it was very difficult to show trend of the outbreak using specific date of disease onset since the outbreak had long duration and if constructed using date of disease onset, it won't be easily understandable. The characteristics of the epi curve is consistent with the mode of transmission of scabies mites that is, person to person through direct skin to skin contact having multiple peaks & falls.

Number of cases starting from epi week 1 up to 24 may not reflect the actual situation of the outbreak at that time since there was no recording and active searching of cases. Retrospectively asking the patient about date of disease onset, line listing of cases was started in September/2016- the time when situation of the outbreak come in to attention of woreda health office after community leaders reported the occurrence of unusually increasing number of skin rash and itching in the community. Consequently, respondents may introduce recall bias in stating the exact date of disease onset due to long duration of the outbreak.

Although the study have showed that there are many risk factors associated with the outbreak educational level of study participants has no statistically significant association to imply as a determinant factor. The reason can be participants enrolled in both (case and control) groups as well as the community at large were more or less at the same educational level-mostly illiterate and primary level. Additionally, having large family size (greater than 6 members in a household) is not a risk factor. This may be justified by the fact that most of the houses in the community were built in proportion to the family size. During house to house visit the total area of the house was observed and determined in a meter square. Consequently, the larger the family size the wider would be the area of the house.

5.1.6 Conclusions

The main risk factor-having history of skin to skin contact with a person who had been infested with scabies mites complemented by other risk factors (sharing clothes with patient of scabies and living in a flood affected area) had fueled the outbreak. The public health surveillance system of Halaba special woreda was unable to identify cases early hence control measures were delayed until the outbreak was wide spread in the community.

5.1.7 Recommendations

Surveillance of scabies should be incorporated in the system of integrated disease surveillance & response (IDSR) system of the region as one of weekly reportable diseases. Leaders in all levels of the health system as well as working in related sectors should give due emphasis for the coordination of prevention and control activities of scabies outbreak. Notification of outbreak and reporting of cases of scabies should be in a timely and organized manner. In order to strengthen flow of information, revitalizing the already established system of reporting specially at the community and health post level is mandatory.

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Chapter 6: Abstract for Scientific Presentation

Author Information:

Authors: Serawit Elias[1], Degu Belachew[2], School of Public Health, Addis Ababa University

Mentors: Prof. Alemayehu Worku, Yeshitila Mogessie

Name of FETP: Ethiopia FETP

FETP Entry: 2015

Email:serel48@yahoo.com

Title:

Outbreak of Scabies in Halaba Special District, Southern Nation Nationalities and People's Regional State, Ethiopia, 2016-A Community Based Case-Control Study.

Abstract Text:

Background: Scabies is an allergic response to an infestation of the skin by the scabies mite. Lymphadenopathy, acute post-streptococcal glomerulonephritis and rheumatic fever are complications related with scabies due to secondary bacterial infection. World health organization listed the problem as one of the neglected tropical diseases. Regional health bureau was notified about the outbreak on September 24/2016. Investigation and control activities were started on October 13/2016.The aim of the investigation was to identify source, control the outbreak and assess risk factors associated with it.

Methods: We employed a 1:2 unmatched case-control study design. Patients were recruited from temporary treatment sites. Controls were recruited from the nearby community by house to house visit and ensuring no scabies patient in the family. Additionally, line listing of cases was done to carry out descriptive analysis. Structured questionnaire was used to collect data.

Result:

Descriptive: The outbreak started in March and ended in October 2016. We line listed 1958 (males 1092 and females 866) patients with scabies. One thousand two hundred eighty eight (65%) were less than 15 years of age. Age ranged from 2 month to 84 years with median age of 12years. Overall attack rate was 4%. The outbreak affected 15 kebeles (Lowest government structure) from the total of 84.

Analytical: We enrolled 100 cases and 200 controls. History of contact with a patient of scabies (P<0.00001) and living in a flood affected area (P<0.0005) were among risk factors associated with the outbreak.

Conclusion: Religious boarding school was implicated as a source of the outbreak. Community mobilized and outbreak controlled according to the guideline of scabies. We strongly recommend the Regional Health Bureau to incorporate scabies surveillance in the integrated disease surveillance system of the region.

Key words: Case-Control, Scabies, Halaba, Surveillance

Words: 273

Chapter 7: Narrative Summary of Disaster Situation Visited

7.1 Narrative Report of Meher Assessment, SNNPR, 2016

7.1.1 Summary

Background: Belg and Meher Assessments are two major national surveys used to assess vulnerability of a population to potential disasters and estimate which group of people are at risk. Food production capacity of a given community and weather condition have strong relationship with risk of epidemics and other public health emergencies. Natural and manmade disasters such as drought, flood and conflict may directly or indirectly lead to occurrence of public health emergencies. Thus purpose of the assessment was to develop evidence based preparedness and response plan in order to intervene early if emergencies are going to happen and prevent loss of life and property.

Methods: The team had conducted the assessment in one special woreda and two zones found in SNNPR. These are Halaba special woreda, Gamogofa zone (Three woredas; Mirab Abaya, Uba Debretsehay and Zalla) and South Omo zone (Four woredas; Male, Bena Tsemay, Dasenech and Gnangatom). Review of documents in the health facilities and observations were carried out using standard checklist. This assessment was conducted in the period of November 22 up to December 06/2016. Data were entered and analyzed by Microsoft Excel version 2010.

Result: All assessed zones and woredas have Emergency Preparedness and Response plan (EPRP) but it is not supported with budget. Acute Watery Diarrhea (AWD), Malaria, Yellow Fever and measles are anticipated to be health risks in the coming January- June 2017. The total number of population at risk was estimated to be 81,273; 10,176 people for AWD, 64,110 people for malaria and 6987 people for measles. Safe drinking water coverage in South Omo zone is at 31.8% and that of Gamogofa zone is at 49%. However, woredas like Dasenech, Uba D/Tsehay, Bena Tsemay and Zala has low coverage of 21%, 31.6%, 36% and 42.1%, respectively.

Conclusion: Emergency preparedness and response plan was not supported by budget. Malaria is the leading causes of morbidity in all visited woredas. Due to poor practices of hygiene and sanitation coupled with low coverage of safe drinking water, most woredas are at risk of acute watery diarrhea and other diseases transmitted through feaco-oral route. There is no nutrition emergency. However, monthly coverage of malnutrition screening in most woredas is very low. Water rationing, provision of ROTO tankers and distribution of water treatment chemicals including maintenance of water schemes will be immediate solution.

7.1.1 Introduction

Belg and Meher Assessments are two major national surveys used to assess vulnerability of a population to potential disasters and estimate which group of people are at risk. The assessment is usually conducted each year before two rainy seasons which are named as Belg and Meher in Ethiopia-hence the name given Belg and Meher assessment. Meher is the main harvesting season and Meher assessment is always conducted following this season to determine the level of agricultural production, map the different risks and predict the potential economic, health and social threats that may occur in the society. Food production capacity of a given community and weather condition have strong relationship with risk of epidemics and other public health emergencies. Natural and manmade disasters such as drought, flood and conflict may directly or indirectly lead to occurrence of public health emergencies. Thus purpose of the assessment is to develop evidence based preparedness and response plan in order to intervene early if emergencies are going to happen and prevent loss of life and property.

During assessment team of experts are organized from sectors of federal and regional government under the leadership of Disaster Risk Management and Food Security Sector. The Ethiopian Ministry of Agriculture, Ministry of Health, Ministry of Energy and Water resources and Ministry of Education with their respective regional bureaus and partners like FAO, UNICEF and WFP are major organizations involved in process from planning to implementation. The regional health bureau of SNNPR through its PHEM core process was one of the members of the assessment team to identify risk of public health related emergencies. Disease outbreaks or other health emergencies like malnutrition, usually follows emergency events either created by natural phenomenon or manmade disasters. During the recent rainy season, rain fall was started late and had erratic pattern with many dry spells in most arid and semi-arid areas of SNNPR. As a result there were drought affected areas that consequently would lead to nutritional emergencies due to shortage of food. The scarcity of water for drinking and domestic purpose in these areas may lead to the emergence of various communicable disease outbreaks and other health related events that could subsequently lead to increased morbidity and mortality. Therefore, conducting periodic assessment of conditions that expose the public to health emergencies has a great importance to forecast the magnitude of threats and accordingly to make the necessary plans and preparations to prevent unnecessary loss of human life and economic damage.

7.1.2 Objectives

General Objective

To assess the types, magnitude, severity and likelihood of health risks in the most vulnerable woredas and develop response plans to fill the gaps.

Specific Objectives:

- To identify Woredas affected by malnutrition and epidemic prone diseases
- To estimate number of people at risk for malnutrition and other epidemic prone diseases
- To identify gaps on the capacity of Woredas in preparedness & response plan

7.1.3 Methods

In the region, there were three multidisciplinary teams organized from various sectors and got orientation on how to fill assessment check list while collecting data on the field. Our team was one of the three teams which the regional disaster risk management and food security core process have given the responsibility of conducting assessment in one special woreda and two zones found in SNNPR. These are Halaba special woreda, Gamogofa zone (Three woredas; Mirab Abaya, Uba Debretsehay and Zalla) and South Omo zone (Four woredas; Male, Bena Tsemay, Dasenech and Gnangatom). Apart from collecting data using structured checklist, review of documents in the health facilities and observations were carried out by the team. This assessment was conducted in the period of November 22 up to December 06/2016. Data were entered and analyzed by Microsoft Excel version 2010.

7.1.4 Results

The assessment has covered eight woredas which are found in two zones and one special woreda (four in South omo zone, three in Gamogofa zone and Halaba special woreda). The total number of population in the visited woredas was 875,578 and number of males and females were 442,497 and 433,080 respectively.

Table 15: Number of total population of visited woredas disaggregated by sex, SNNPR, 2016

Zone/special woreda	Woreda name	Total population	Male	Female
South omo	Male	108,811	55,078	53,733
	Bena Tsemay	68,436	34,643	33,792
	Dasenech	68,153	34,819	33,333
	Gnangatom	22,617	11,402	11,215
Gamogofa	Mirab abaya	97,535	48,720	48,815
	Uba debretsehay	89,701	45,346	44,355
	Zalla	95,871	48,459	47,412
Halaba sp. woreda	Halaba town administration	40,970	21,287	19,684
	Halaba rural	283,484	142,743	140,741
Total		875,578	442,497	433,080

Coordination

There is functional regional Public Health Emergency Management (PHEM) coordination forum conducting the meeting on regular bases. There is also zonal and woreda level coordination forums but frequency of the meeting varies from one zone to another and meets only when there is an emergency. Rapid Response Team (RRT) was found established at zonal, woreda and health facility level but didn't meet regularly. Besides, there is no training given to RRT members in the previous two years in the region. All assessed zones and woredas have Emergency Preparedness and Response plan (EPRP) but it is not supported with budget.

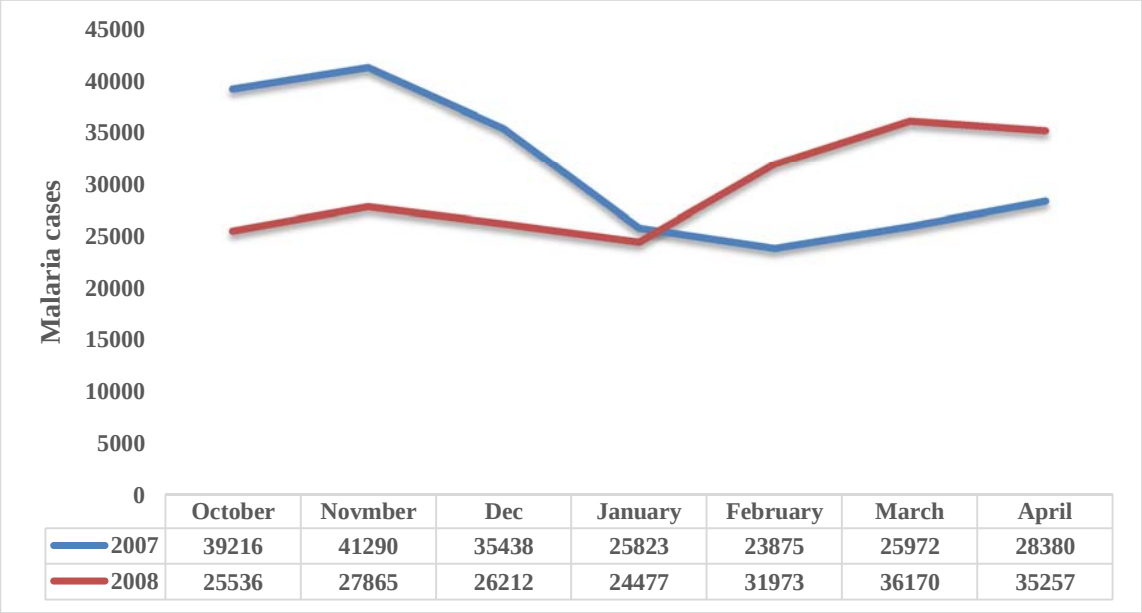
Top five causes of morbidity

Top five causes of morbidity for under five is listed to be pneumonia, Diarrhea, all respiratory diseases, acute febrile illness and malaria all type in order of priority in the region. Similarly, acute febrile illness, typhoid fever, malaria all types, trauma and pneumonia were also prioritized to be top five causes of morbidity for above five years of age of the population. From the above list of diseases therefore, Acute Febrile Illness, pneumonia and malaria are causes of morbidity in both under five and above five age groups in 2007 E.C in the region.

Epidemics reported in the previous three months

Malaria

54 out of 157 woredas are malaria endemic woredas and hence malaria is the most pressing challenge in SNNPR. To this effect, almost all woredas assessed have been reporting malaria cases though the degree of malaria prevalence varies from woreda to woreda and month to month in the assessed zones. In general, malaria is among the top five causes of morbidity for all above five and under five years of age of the population in the region. A lot has been exerted to prevent and control malaria prevalence in malaria prone woredas. However, malaria case build up has been reported in many woredas and needs to work more so as to reduce malaria induced illness in malaria endemic woredas. The below line graph depicts comparative analysis of malaria prevalence trend in the region.



	October	Novmber	Dec	January	February	March	April
2007	39216	41290	35438	25823	23875	25972	28380
2008	25536	27865	26212	24477	31973	36170	35257

Figure 27: Trend of malaria cases compared to last year same months in SNNPR, October- April 2016

As indicated above, the highest malaria cases were reported in November 2007. The number of cases reported in January of the two years is almost the same. However, malaria cases were increased from February to April on average by 27% in 2008 and the cases in February and March 2008 was higher compared to same months in 2007 EC. On the other hand the cases were increased from October to December by 31% in 2007 compared to same period in 2008. The cases reported in April 2016 is still higher compared to last year same month but declining trend compared to the preceding month.

Acute watery Diarrhea (AWD)

In the period of data collection there was no AWD outbreak in SNNPR. However, AWD outbreak was reported in the 6th March- 19 April 2016 in three woredas of Gamgofa and one woreda in Segen zone. About 11 kebeles in Arbaminch town, 12 kebeles in Arbaminch zuria, one kebele in Bonke and 1 kebele in Amaro were affected due to the outbreak. A total of 374 cases (205 Male and 160 female) with five deaths making the case fatality rate of 1.4% were reported in the affected woredas. Among the reported cases, 298 cases (82%) were from Arbaminch Town, 64 cases (17%) from Arbaminch zuria, 3 cases (1%) from Bonke and 9 cases from Amaro woreda. The highest number of AWD cases were reported from Woze kebele 91(25%) of Arbaminch town followed by Dilfana kebele 72 (20%) and Kulfo kebele 45(12%). There were intensive control and prevention measures during the outbreak and thus the outbreak was contained within short period of time. Zero reporting has been under way for the last consecutive weeks. However, after 42 days zero reporting, new AWD cases were reported in Arbaminch zuria and a total of 17 cases were reported from June 06 to 14/2016 in Arabaminch zuira woreda. This implies that AWD is a threat not only in Gamgofa but also in other adjacent woredas and zones of the region.

Measles

Measles cases reported in the region has declining trend compared to the previous successive months in the region. According to the Regional Health Bureau (RHB), a total of 3505 cases were reported in the period of July- March/2016 in SNNPR. Measles vaccination campaign was conducted in 111 out of 157 woredas in May. However, vaccination is not conducted in the remaining 46 woredas of the region. To prevent occurrence of Measles outbreak therefore, strengthened routine immunization should be conducted in areas where vaccination is not carried out during campaign in May 2016.

Ongoing Disease Outbreak

643 salmonella cases in Benatsemay woreda and 22 suspected Yellow fever cases and five deaths in South Ari woreda of South omo were reported in May 2016. Zero reporting is ongoing currently in the affected areas. Besides, 16 measles cases in different woredas and 17 AWD cases in Arbaminch zuria woreda were reported in June 2016 in SNNPR. This implies that there is risk of AWD outbreak currently in the region. To this effect, AWD is likely to expand to other woredas and zones and hence the need for adequate preparedness and prepositioning of medical supplies

and intensive hygiene promotion and social mobilization works including strengthened surveillance need especial attention.

Besides, though existing prevalence of malaria seems stable and there is adequate intervention in terms of ITNs distribution, IRS spray and environmental management, experience of ITNs utilization and erratic nature of the rain may favor malaria outbreak in malaria prone woredas. Promotion of ITNs utilization and provision of adequate anti malaria drugs including environmental management shall be given especial attention in the coming months.

Situation of nutrition

Screening for malnutrition was conducted monthly with varying magnitude of screening coverage and also with some interruptions. We have observed interruptions of monthly screening in Male (July), Bena Tsemay (July and August), M/Abaya (May), Dasenech (May-Oct). Screening coverage for under five children in most months was above 70% but Uba D/Tsehay had low coverage in August (31%) and Sept. (65%); Dasenech in May (58%) and August (27%) and Zala in July (56%). The maximum Proxy GAM rate reported for children less than five years of age was 6.6% in Uba D/Tsehay in the month of July which had screening coverage of 76%. The maximum Proxy SAM rate reported for less than 5 years was 0.9% in Zala in the month of July with screening coverage of 56%. The maximum Proxy GAM rate for PLW was 22.7% in M/Abaya in the screening conducted in August with screening coverage of 94%.

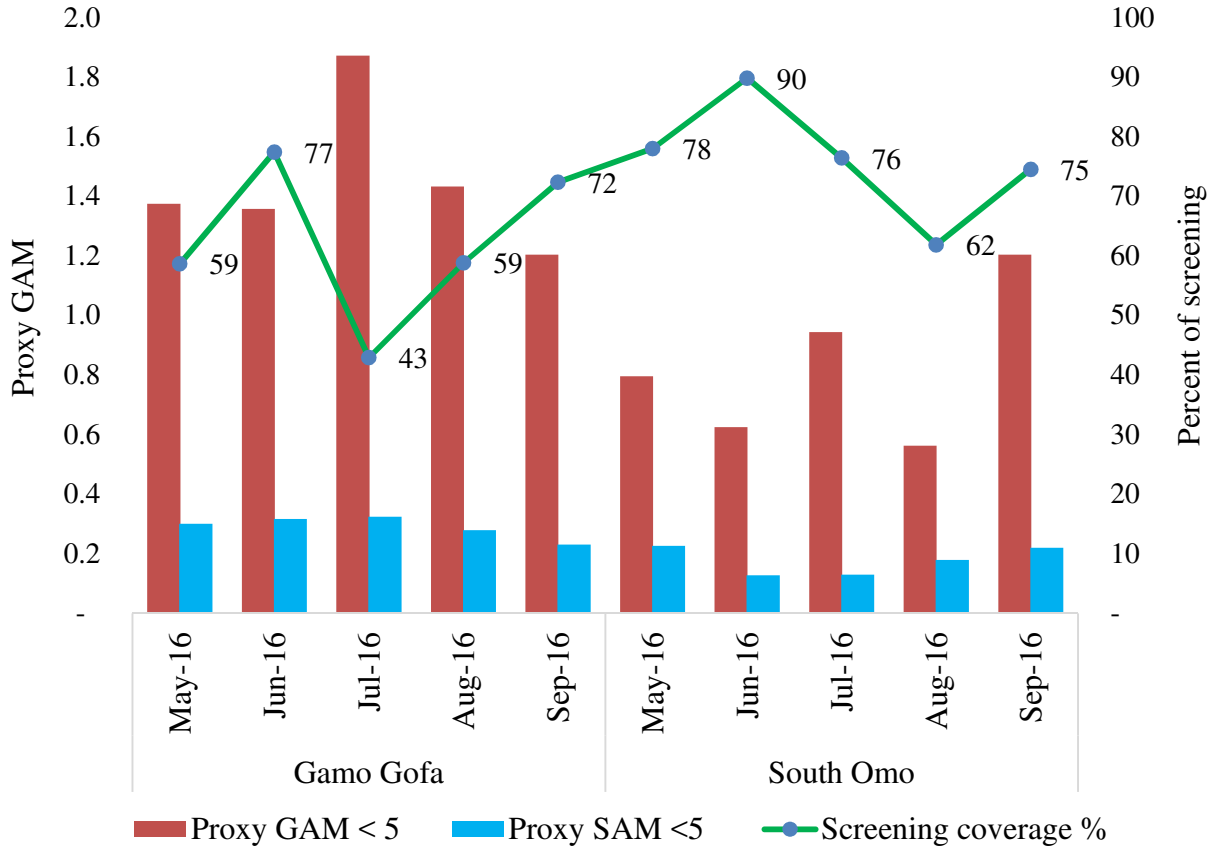


Figure 28: Trends of Acute Malnutrition in Gamogofa and Debub Omo zones based on Proxy Indicators and Screening Coverage, 2016

All of the health posts in the visited woredas implement SAM treatment protocol. 100% of the health centers in M/Abaya, Zala, Uba D/Tsehay and Halaba implement treatment protocol of SAM but only 25% of HC in Bena Tsemay and 75% of HC in Male run SC services in the health center. Trends of SAM admission from May – Oct 2016 doesn't show significant increase that can justify an emergency nutrition situation in all visited woredas. Adequate RUTF is available in all woredas for the next three months. Therapeutic milks (F75 and F100) are available but not adequate for the next three months. The majority of health centers have adequate water in the health centers but one health center in Male and 4 in Zala have water problem. More than 90% of the HEWs were trained on SAM management.

Regarding to moderate acute malnutrition, Out of the visited 8 woredas, Halaba special woreda is the only one that has been implementing the routine TSF program. In areas where NGO's implement nutrition intervention, there was discharge ration of two months for children

discharged from OTP. GOAL Ethiopia was supporting the nutrition programs in M/Abaya, Zala and Uba D/Tsehay and was providing protection ration but now phased out.

Anticipated Epidemics in the coming six months (January- June 2017)

AWD, Malaria, Yellow Fever and measles are anticipated to be health risks in the coming January- June 2017 as mentioned above. The latrine coverage of the region is 91% (27% improved). No data on utilization rate and is expected to be far lower compared to the reported coverage. Besides, 33% hand washing facility and 67% of safe water supply coverage have been reported in SNNPR. However, actual hand washing practices and safe use of water supply systems is a challenge at community level.

Malaria

Malaria case build up has been reported in almost all malaria endemic woredas. To this effect, a lot has been invested to control and prevent the outbreak. Extensive Prevention measures mainly IRS, ITNs distribution and environmental management has been undertaken in the assessed woredas. Moreover there is no shortage of antimalarial drugs in the assessed woredas. However, taking into consideration, existing ITNs utilization rate, favoring climate condition in the coming months and lower IRS coverage due to shortage of operational budget to complete the spray in most woredas, malaria outbreak is still a threat in the coming months. The Indoor Residual Spray (IRS) coverage for 2008 E.C is only 61% in the region.

Taking into consideration, above mentioned facts therefore, risk population is estimated to be 5,087,795 (10,176 people) for AWD, 3,205,493 (64,110 people) for malaria and 3,493,692 (6987 people) for measles. Besides, taking into account the recent suspected cases, yellow fever is also anticipated to be likely in the coming months. The below table summarizes drugs and medical supply requirements in SNNPR

Table 16: Requirement of Drugs and medical supplies, SNNPR, 2016

S/n	Item	Unit	Total required	Available	Gap
1	Ceftriaxone	vial	14,350	6,600	7750
2	Oily CAF	vial	3,000	0	3,000
3	Doxycline	cap	483,200	164,800	318,400
4	Ringers lactate	bag	6,520	2,971	3,549
5	ORS	sachet	90,320	31,050	59,270
6	Vitamin A	cap	1,875,000	0	1,875,000
7	Pastorex (meninigitis)	pcs	1,250	0	1,250
8	LP set	pcs	400	0	400
9	TI bottle	number	245 bottle	44	201
10	CTC kit (AWD)	number	10kit	0	10
12	Gloves (examination)	pcs	180,300	96,900	83,400
13	Syringe	number	120,000	48,000	72,000
14	PPE	number	60kit	30kit	30kit

Emergency Reproductive health

Women and girls are among the vulnerable group who are disproportionately affected by different natural and manmade Hazards. The impact of existing drought and flooding have been causing life threatening reproductive health problems. Anaemia, low birth weight, abortion and other complications are some of reproductive health problems facing pregnant women that needs immediate actions in drought affected areas. Among proposed relief beneficiary, 237,736 women are identified to be women of reproductive age during the belg assessment period. Accordingly, the number of pregnant women was calculated to be 31,360 women in the assessed areas.

Sexual and reproductive health issues mainly maternal health, HIV and Gender Based Violence (GBV) need to be incorporated in the public Health emergency preparedness and response plan to facilitate the coordination and implementation of Minimum Initial Service Package for reproductive Health when emergency occurs in the assessed areas. Shortage of lifesaving reproductive and maternal

health medicines, equipment and supplies that deterred health facilities to provide lifesaving Basic and Comprehensive Emergency Obstetric and New Born Care services were identified during the belg assessment in vulnerable areas. Essential and lifesaving maternal health medicines such as magnesium sulphate, anticonvulsants, antihypertensive, uterotonic drugs that are critical for the provision of emergency obstetric care health services are missing. Besides, there are in short of essential equipment and supplies mainly blood transfusion supplies, vacuum extractors, manual vacuum aspiration sets, and mucus extractor. In addition, health facilities in the assessed woredas lack medicines and supplies designed and packed for the treatment of rape survivors.

Water, Hygiene and Sanitation

Safe drinking water coverage in South Omo zone is at 31.8% and that of Gamogofa zone is at 49%. However, woredas like Dasenech, Uba D/Tsehay, Bena Tsemay and Zala has low coverage of 21%, 31.6%, 36% and 42.1% respectively. Majority of health and school institutions don't have their own water schemes and access water from the communal water schemes. Hand washing facilities in schools and health institutions are almost non-existent and the sanitation status is poor. Though the latrine coverage of all visited woredas is above 90%, most health and school institutions do not have separate rooms for men and women. Due to the current drought 9 kebeles in Malle, 10 in Bena Tsemay, 11 in Zalla, 6 in Mirab Abaya, 6 in Dasenech and 5 in Uba D/Tsehay have severe water shortage both for human and the livestock. Water rationing, provision of ROTO tankers of more than 10,000 liters capacity and distributing water treatment chemicals are the immediate solution for Malle, Bena Tsemay and Uba D/Tsehay. Maintaining water schemes and distributing water treatment chemicals are the immediate solutions to solve water problems in Mirab Abaya and Zala. South Omo zone is disappointed by the regional Water bureau in that it has taken 3 years to finalize bidding process to construct additional water schemes in the zone. At this critical time, it has been observed that adequate and timely response was not given by the regional Water Bureau.

Table 17: Proposed Water, Hygiene and Sanitation intervention in the affected kebeles, 2016

Woreda	**Affected Kebeles**	**Proposed Intervention**
Male	Erbo, Kela, Ajo, Karaba bobo, Daniker, Gongode, Geragodu, Golo	Water rationing, Purchase of Roto Tankers and materials for scheme maintenance and purchase of water treatment Chemicals
Bena Tsemay	Aymele, Ufiy, Ruri, Gonia, Aniseda, Gisma Wonina, Befo, Diziama, Bura, Bola	Water rationing, Purchase of Roto Tankers and materials for scheme maintenance and purchase of water treatment Chemicals
Uba D/Tsehay	Zeka, Gelada, Yelashabo, Hashesha, Shala Thite	Immediate solution will be allocating budget to purchase Fuel for the generator but long term solution will be searching cost effective alternative technology like Solar technologies.
Zala	Oda Shaba, Wagesho, Selo Bola, Gayletosa, Kawsa, Deboch Bana, Berawiga, Garma, Baykela, Baysa, Babo	Maintenance of non-functional water schemes, Strengthening WASH committee and building their capacity
Mirab Abaya	Korga, Faragosa, Mole, Ugayehu, Zela Gutusha,	Maintaining the malfunctioning water schemes and distribute water treatment chemicals
Dasenech	Bubua, Ocholech, Hado, Toltale, Bukruke, Sirameret	Maintenance of non-functional water schemes, Strengthening WASH committee and building their capacity
Halaba	Lenda, Hansha, Kufe, Mekela, Kochene	Maintenance of water schemes

Table 18: Requirement of materials and budget for the interventions in the affected kebeles, 2016

S/No	Intervention type	Woreda	Materials Needed	Budget Required (Birr)
1	Rehabilitation and replacement of Community water supply schemes	Zalla, Mirab Abaya, Uba D/Tsehay and Halaba	Generator 50 KVA and Pump 30 KW (Gelada & Zeka), Generator 30 KVA (Malle) and 15 KW Pump, 15 Hand pump	1,500,000.00
2	Water rationing and purchasing of ROTO tankers	Malle, Bena Tsemay, Uba D/Tsehay	-9 tankers for Malle -10 tankers for Bena Tsemay -3 tankers for Uba D/Tsehay (1 ROTO tanker = 30,000) -9 dewatering pump (1 pump=50,000 birr) -Rental truck (3) (250,000 birr/month) -Fuel and perdiem (500,000 birr) -Water emergency kit (2) (1 kit= 400,000)	3,910,000
3	Water treatment chemicals (Bishangary, water guard, chlorine…)	Malle, Bena Tsemay, Dasenech, Zalla and Uba D/Tsehay	Pure, Bishan Gari, Water Guard , lime (100 qtr.), Aluminum sulfate (20 qtr.), Chlorine (20 drum)	200,000
Total				5,610,000

7.1.5 Conclusion & Recommendations

In most visited woredas emergency preparedness and response plan was not supported by budget that makes the health sectors in the woredas to expect all resources from regional health bureau even in the middle of emergency situation. According to reports of morbidity malaria is the leading causes of morbidity in all visited woredas. Due to poor practices of hygiene and sanitation influenced by low coverage of safe drinking water, most woredas are at risk of acute

watery diarrhea and other communicable diseases that can be transmitted through feaco-oral route. There was no as such situation to be called nutrition emergency. However, monthly coverage of malnutrition screening in most woredas is very low. Moreover, because the selected weredas were priority one hot spot woredas, attention was given by the government and donors to support people in need of household food security. Water rationing, provision of ROTO tankers and distribution of water treatment chemicals including maintenance of water schemes are vital activities as a short term solution in water scarce areas. In the long run there is a need of increasing safe drinking water coverage of many woredas in the region.

Chapter 8: Protocol/Proposal for Epidemiologic Research Project

8.1 Assessment of malnutrition prevalence and associated factors in children under the age of five years in Wonago district, Gedeo zone, SNNPR, 2017

8.1.1 Summary

Background: Malnutrition becomes the most determinant public health problem that can affect social, economic and political aspects of a country. Low and middle income countries of the world have been threatened by the consequences of malnutrition for centuries. Unfortunately, not only malnutrition but also over-nutrition-related diseases emerged before the battle against under-nutrition deficiency diseases has been won. Many factors are involved in the interplay of causation ranging from basic, underlying to immediate causes. These may include socio-cultural, economic, political, food insecurity, infections and others.

Objectives: the aim of this study is that assessing the prevalence of malnutrition and associated factors focusing on effectiveness of preventive nutritional interventions such as safety net, supplementary feeding program and community based management of acute malnutrition in wonago district, SNNPR.

Methods: community based cross sectional study design will be employed. Mix of quantitative and qualitative methods will be employed. The qualitative methods will yield findings on effectiveness of preventive nutritional interventions which is the focus of this study. Study subjects will be recruited using stratified multistage sampling technique paired with their mothers. The sample size will be 760 including the design effect and 5% non-response rate.

Work plan & budget: the total time needed to accomplish this project starting from the approval of proposal to the dissemination of result is six month (July to December/2017). Cost of the project is estimated to be 79,006.40Birr.

8.1.2 Introduction

Malnutrition especially undernutrition is one of critical public health problems which has detrimental effect on social, economic and political aspects of a country. Malnutrition literally means "bad nutrition" and technically includes both over- and under- nutrition. The World Food Program (WFP) defines malnutrition as "a state in which the physical function of an individual is impaired to the point where he or she can no longer maintain adequate bodily performance process such as growth, pregnancy, lactation, physical work and resisting and recovering from disease"(1). Even though malnutrition includes both over- and under- nutrition, our focus will be under- nutrition. Acute Malnutrition is classified into severe acute malnutrition (SAM) and moderate acute malnutrition (MAM) according to the degree of wasting and the presence of edema. It is severe acute malnutrition if the wasting is severe (W/H < 70% NCHS median or a low MUAC) or there is edema. Acute Malnutrition is defined as moderate acute malnutrition if the wasting is less severe (W/H between 70% and 80% NCHS median); edematous cases are always classified as severe (2).

According to Global Nutrition Report of 2016, out of 667 million children under age five worldwide 159 million were too short for their age (stunted), 50 million do not weigh enough for their height (wasted) and 41 million were overweight. However, the report concluded that the number of stunted children under 5 is declining in every region except Africa and Oceania (3). Africa shows rising numbers of stunted children due to population increase and an almost stagnant prevalence of stunting over the past two decades - of the 34 countries that account for 90% of the global burden of malnutrition, 22 are in Africa including our country Ethiopia (4).

Ethiopian Demographic and Health Survey (EDHS) of 2016 has revealed that 38 percent of children under 5 are considered short for their age or stunted (below-2 SD), and 18 percent are severely stunted (below -3 SD). Overall, 10 percent of children in Ethiopia are wasted, and 3 percent are severely wasted (below -3 SD). 24 percent of all children are underweight (below -2 SD), and 7 percent are severely underweight (below -3 SD) (5). In the SNNPR malnutrition is most prevalent public health problem next to malaria. Wonago district, the area where this study will be conducted, is the district with the highest burden of malnutrition compared to the rest 7 districts in Gedeo zone. There were 1166 cases of acute malnutrition in the year of 2016 as indicated in weekly surveillance report of priority diseases and health related events of the region.

Factors determining the prevalence of malnutrition operate at different levels of causation. It ranges from the most distal socioeconomic and political determinants to the proximate level where food, disease, and care have a crucial role. The large socioeconomic inequalities in stunting prevalence in almost all low-income and middle-income countries (LMICs) show the great importance of distal determinants (6). The factors that contributed for higher prevalence of malnutrition in Africa could be poverty, illiteracy, ignorance, big family size, climate change, policy and corruption (1).

Rationale of the study

Although there are a number of interventions which are designed to fulfil the nutritional needs of children and women in the health system as well as other sectors of the country, the problem of malnutrition is not controlled as expected. In hot spot priority one woredas of SNNPR severe acute malnutrition is still issue of concern to leaders of the health system. Therefore, the aim of this study is to assess factors influencing the prevalence of malnutrition and effectiveness of nutritional interventions in the study area.

8.1.3 Literature review

Globally, the prevalence of stunting had decreased from an estimated 40% in 1990, to an estimated 26% in 2011-an average reduction of 2.1% per year. It was 35% decline from an estimated 253 million in 1990 to 165 million in 2011. East and West Africa, and south-central Asia have the highest prevalence estimates with 42% (East Africa) and 36% (West Africa and south-central Asia) (6). Africa shows rising numbers of stunted children due to population increase and an almost stagnant prevalence of stunting over the past two decades - of the 34 countries that account for 90% of the global burden of malnutrition, 22 are in Africa (4). Despite the millennium development goals target to reduce hunger by half by 2015, major failures have been recorded mainly in Africa (1). In Ethiopia, 38 percent of children under 5 are considered short for their age or stunted, 10 percent of children are wasted and 24 percent of all children are underweight. Variations exist between regions highest prevalence of stunting had been recorded in the Amhara region (46%) and lowest in Addis Ababa (15%) (5).

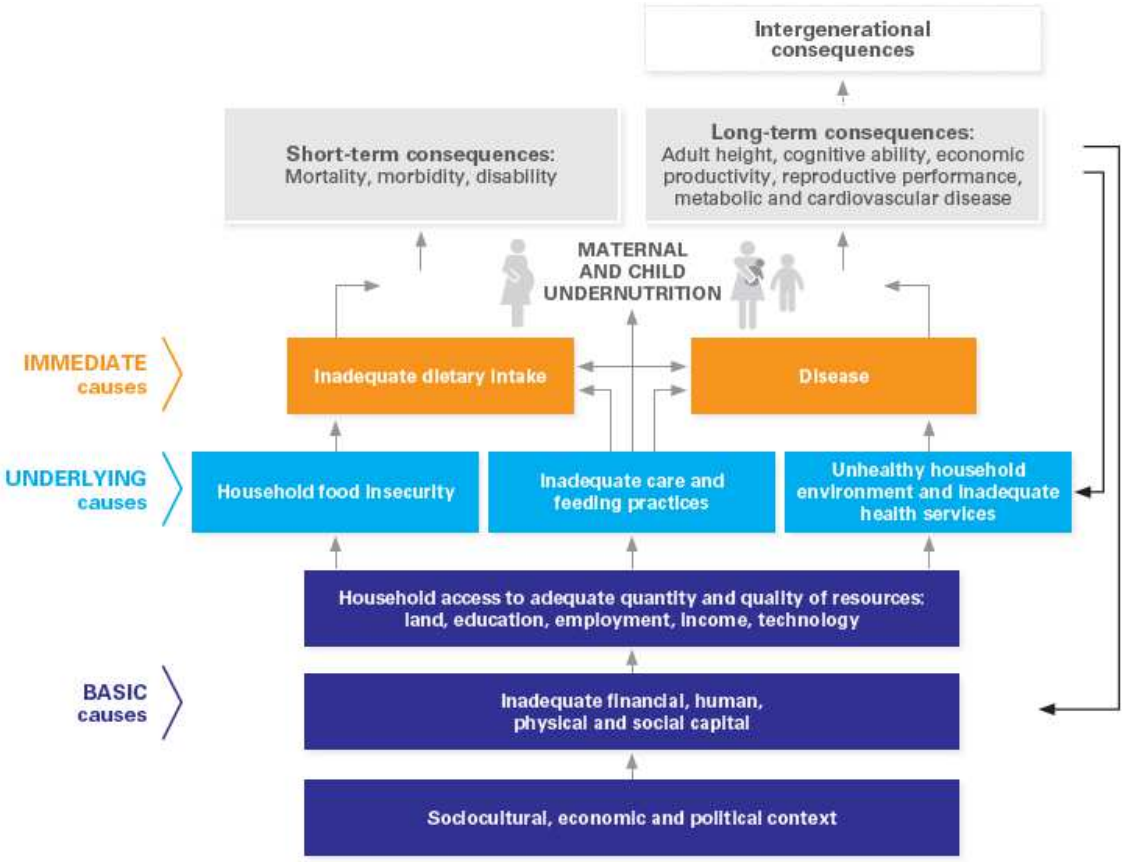
Suboptimum growth, according to anthropometric measures indicative of stunting, wasting, and underweight, has been shown to increase the risk of death from infectious diseases in childhood. All anthropometric measures of under nutrition were associated with increased hazards of death

from diarrhea, pneumonia, and measles. Stunting and underweight have the highest proportions of attributed child deaths, about 14% for both; wasting accounts for 12.6% (severe wasting 7.4%) of child deaths. Stunting is a well-established risk factor for poor child development with numerous cross-sectional studies showing associations between stunting and motor and cognitive development. Several longitudinal studies show stunting before age 2–3 years predicts poorer cognitive and educational outcomes in later childhood and Adolescence. Stunted children show behavioral differences in early childhood including apathy, more negative affect, and reduced activity, play, and exploration (6). Brain and nervous system development begins early in pregnancy and is largely complete by the time the child reaches the age of 2. The timing, severity and duration of nutritional deficiencies during this period affect brain development in different ways. Furthermore, The economic consequences represent losses of 11 percent of gross domestic product (GDP) every year in Africa and Asia, whereas preventing malnutrition delivers $16 in returns on investment for every $1 spent (7).

Certain groups are particularly vulnerable to food insecurity, including women (especially low income pregnant and lactating women), victims of conflict, the ill, migrant workers, low-income urban dwellers, the elderly, and children under five(1). In households which are vulnerable to food insecurity, women are at greater risk of malnutrition than men. This condition is seen in South Asian and African communities, where boys and men are culturally selected to eat more nutritive foods such as eggs (1). However, in Ethiopia, stunting is greater in Male children, age 24-35 months and children who live in a rural area (5, 10). Almost all stunting takes place in the first 1000 days after conception (6).

Many factors interplay with occurrence of malnutrition. Maternal education is associated with improved child-care practices related to health and nutrition and reduced odds of stunting, and better ability to access and benefit from interventions. Severe infectious diseases in early childhood—such as measles, diarrhea, pneumonia, meningitis, and malaria can cause acute wasting and have long-term effects on linear growth. However, studies have consistently shown that diarrhea is the most important infectious disease determinant of stunting of linear growth. (6). High rates of intrauterine growth retardation – about 20% of stunting by 24 months can be attributed to being SGA. Maternal stunting and low BMI increases the risk of fetal growth restriction (SGA) (4).

Root causes of malnutrition in Sub - Saharan Africa are poverty, ignorance and lack of education, Climate change, Government policy, political zeal and corruption, Poor distribution channels and inequalities in global food distribution, Sociocultural and religious factors (Breastfeeding practices and weaning foods, maternal educational level, maternal age, marital status, availability of pipe borne water and latrines) have been reported to be associated to malnutrition. Excessive food aid without any insistence on guaranteeing sustainability has been cited by some authors as a perpetuating factor of this ill in Sub Saharan Africa. (1).



Source: United Nations Children's Fund (UNICEF); improving child malnutrition, April 2013

Figure 29: Conceptual framework to show interrelationship between factors influencing occurrence of malnutrition, 2016

The co-existence of under- and over-nutrition in the same household, family or community appears to be controversial. This double burden is extended to a double burden of disease. Therefore, as in many other developing countries, the over-nutrition-related diseases emerged before the battle against nutrition deficiency diseases has been won. This phenomenon can, at

least partially, be explained by the effects of fetal malnutrition and the low quality of staple-food diets (sufficient energy but not enough micronutrients) in poor households (1)

Just a few years ago, nutrition was a neglected area of development, and the nutrition community was fragmented, lacking a common voice or unified approach. The global nutrition community is uniting around the Scaling up Nutrition (SUN) movement, which supports nationally driven processes for the reduction of stunting and other forms of malnutrition. The initiation of the SUN movement in 2010 brought about much-needed change (7). There is a need for greater national priority for nutrition program, more integration with health program, enhanced inter sectoral approaches, and more focus and coordination in the global nutrition system of international agencies, donors, academia, civil society, and the private sector (6).

In tackling child malnutrition, there has been a shift from efforts to reduce underweight prevalence (inadequate weight for age) to prevention of stunting (inadequate length/height for age). The World Health Assembly has adopted a new target of reducing the number of stunted children under the age of 5 by 40 per cent by 2025 (7). Overall, the new evidence strengthens the importance of the critical 1,000 day window during pregnancy and the first two years of life, highlighting the need to act early in pregnancy and even prior to conception(4). At least 12 of the 17 Sustainable Development Goals contain indicators that are highly relevant for nutrition, reflecting nutrition's central role in sustainable development. The world's countries have agreed on targets to reverse the trend and end all forms of malnutrition by 2030 (3).

Support for local and regional farming, climate prediction methods, financial aid for development and infrastructure, and a more united aid initiative would lead Sub Saharan Africa towards sustainable and reliable food sources and a more secure future. But more importantly, these solutions would lead to less dependency on foreign food aid and greater reliance on solutions from within Sub Saharan Africa (1).

There are proven interventions to address the problem of malnutrition. These are Improving women's nutrition, especially before, during and after pregnancy; early and exclusive breastfeeding; timely, safe, appropriate and high-quality complementary food; and appropriate micronutrient interventions. There is also growing interest in adolescent health as an entry point to improve the health of women and children, especially because an estimated 10 million girls

younger than 18 years are married each year (7). Community-based management of severe acute malnutrition (CMAM) is another area of focus to prevent and treat early cases of malnutrition (8). The CMAM approach consists of four components: community outreach; outpatient therapeutic program (OTP), inpatient care and supplementary feeding program (9).

It is not clear that with these all interventions the number of undernourished children is not declining through time in the hot spot districts of SNNPR in general and Wonago district in particular that is the area this study is going to be conducted. We will try to study the prevalence of malnutrition and associated factors focusing on preventive nutritional interventions.

8.1.4 Objectives

General

To assess prevalence of malnutrition and related factors in children less than five years of age in Wonago district, Gedeo zone, SNNPR

Specific

- To determine prevalence of malnutrition among children less than five years of age in Wonago district
- To assess factors associated with prevalence of malnutrition in the community of Wonago district
- To determine effectiveness of preventive nutritional interventions in Wonago district

8.1.5 Methods

Study area

Wonago district is one of 8 districts found in Gedeo zone situated around 372 km away from Addis Ababa in the high way which joins Kenya with Addis Ababa. The area is known by its production of cash crops like coffee, fruits, inset and vegetables that make the land scape of the area to be evergreen. Gedeo zone in general is the place where farmers have traditional skill of preserving agroforestry for both maintaining weather condition of the area and utilizing the products of the forest as a means of income as well as source of food. The staple diet is kocho which is produced from inset and it has mainly carbohydrate and fiber. Farmers usually engaged

in mixed farming that is rearing of cattle (most of the time fattening of oxen) and cultivation of plants mainly cash crops. The projected total population in 2009EC is 156,480; males are 77,873 and females are 78,607. Mokonisa kebele which is found in the district is the area with highest population density in Africa.

Study design

Community based cross sectional study design will be employed

Source population

All children whose ages are between six and 59 months and who are living in Wonago district

Study population

Those children selected from source population using stratified cluster sampling technique and who fulfil the eligibility criteria will be included in the study population.

Eligibility criteria

Children with the age of six months to 59 months and who are residents (more 6 months) of the study area will be included in the study.

Sample size determination

$n = g \times Z^2 p(1-p)/w^2$, $p = 0.38$, $w = 0.05$, $g=2$, $Z = 1.96$ (i.e., for a 95% C.I.)

$n= (1.96)^2 (0.38 \times 0.62)/0.05^2$

n= 362

Considering the design effect and non-response rate of 5%, the final sample size will be 760

Where; n=sample size, Z = level of confidence, P = proportion of malnutrition, W = the degree of precision and g = design effect.

Sampling method

Stratified two stage sampling technique will be used to enroll study participants. The sampling process will have two stages that is selection of kebeles within the district and selecting

households from sampled kebeles. Additionally kebeles will be divided into rural and urban to form two strata of population. Proportional sample size for each selected kebeles will be allocated based on the total number of households which have children whose ages fall in the range of six and 59 months. If two or more children found in the selected household, one child will be chosen by lottery method. After classifying the kebeles in to urban and rural, households to be included in the study will be selected by systematic random sampling.

Dependent variables

Stunting

Wasting

Underweight

Effectiveness of preventive interventions

Independent variables

Age

Sex

Maternal education

Income

Infant and child feeding practice

Number of children born to a mother

Utilization of family planning

Infection

Data collection method

Semi structured questionnaire will be used to collect data both on quantitative and qualitative variables in order to identify factors associated with prevalence of malnutrition. Additionally,

weighing scale, measuring board and MUAC tape measure will be used to measure Weight, height, length and mid upper arm circumference of study subjects in order to determine anthropometric indices. Length will be measured for children less than 2 years of age in a recumbent position on a measuring board whereas for children 2 up to 5 years of age their height will be measured in a standing position. Mothers of study subjects will be interviewed by trained data collectors. In addition, focus group discussion with beneficiaries and experts of preventive interventions of malnutrition such as safety net, CMAM and supplementary feeding programs will be held to ascertain their effectiveness.

Data analysis

Data will be entered and analyzed using Epi info version 7 software. Anthropometric indices of height for age, weight for height and weight for age will be identified to classify study participants in to stunted, wasted and underweight, respectively. World Health Organization standards for classification of malnutrition will be used. Proportion, confidence interval, p value and odds ratio will be calculated. Logistic regression model will be fitted to determine which factors are statistically significant.

Data quality management

Data collectors will intensely trained on how to collect pertinent data using various data collection instrument, subject matter of the study and how to approach respondents. Pre-testing of questionnaire will be done on 5% of sample size in participants who live out of study area. The sample size is determined considering 5% non-response rate so that it minimizes bias while interpreting findings. Furthermore, supervisors will be assigned to make sure the completeness of questionnaires, monitor data collection process and submit the collected data to principal researcher on a daily base.

Ethical consideration

The proposal will be reviewed by institutional review board of regional health bureau. Support letter that allows conducting the study in the area will be sought from respective government body. Informed written consent will be requested from each respondent. Personal identifiers will not be included in the questionnaire in order to keep confidentiality.

Dissemination of results

The final report of this study will be disseminated to local, national as well as international audiences using appropriate means of communication after approval concerned bodies.

8.1.6 Work plan

Table 19: Tentative plan of action that shows duration and activities of the project, Wonago district, 2016

S/N	Activities	July 2017				August 2017				Sept 2017				October 2017				Nov 2017				Dec 2017			
		Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4
1	Project approval and ethical clearance																								
2	Preparation of data collection tools																								
3	Training data collectors																								
4	Pre-testing questionnaires																								
5	Collecting data (field work)																								
6	Data entry, clearing and analysis																								
7	Report writing																								
8	Report submission																								
9	Dissemination of findings																								

8.1.7 Budget

Table 20: Requirement of budget to accomplish the project, Wonago district, 2016

s/n	Category of expense	Item	Quantity	Unit cost (Birr)	Total cost (Birr)
1	Personnel	DSA for Training	10*3 days	210	6,300
		» Data collectors	7*11 days	210	16,170
		» Supervisors	2*11 days	210	4,620
		» Researcher	1*11 days	210	2,310
				Sub total	**29,400**
2	Materials & equipment	A 4 size paper	10 pack	130	1,300
		Flip chart	1 pcs	200	200
		pen	1 pack	250	250
		pencil	1 pack	24	24
		marker	1 pack	150	150
				Sub total	**1,924**
3	Transport	Car rent	15 days	1,000	15,000
		fuel	450litre	20	9,000
				Sub total	**24,000**
4	Communication	Mobile card	15	100	1,500
5	Indirect cost	Photo copying, loading & unloading of materials	Lam sum		5,000
6	Publication		Lam sum		10,000
			10% contingency		7,230
			Grand total		**79,006.40**

8.8 References

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Chapter 9: Other Additional Output Reports

9.1 Weekly bulletin of surveillance

South Nations Natonalities and People's Regional State Health Bureau

Public Health Emergency Management (PHEM) Core Process

WEEKLY PHEM BULLETIN

Epidemiologic Week 43, 2016 (14/02/09 - 20/02/2009 E.C); Hawassa; Tele: 0462120281; phemsnnpr@gmail.com

Highlight of the week

- ✓ There is ongoing outbreak of scabies in Halaba special woreda, Hadiya, Kembata & Silte zones.
- ✓ All cases of priority diseases under surveillance have decreased in the week except malaria
- ✓ 54 field epidemiology residents have been oriented & deployed to selected

Report completeness

All zones and special woredas have submitted weekly PHEM report in the 43rd epidemiologic week of 2016. Out of expected 4,635 governmental health facilities in the region, 4,406 health facilities submitted PHEM report in the week. As a result, 95 % of PHEM report completeness has been achieved at the regional level in this week whereas the regional target is 90% and above.

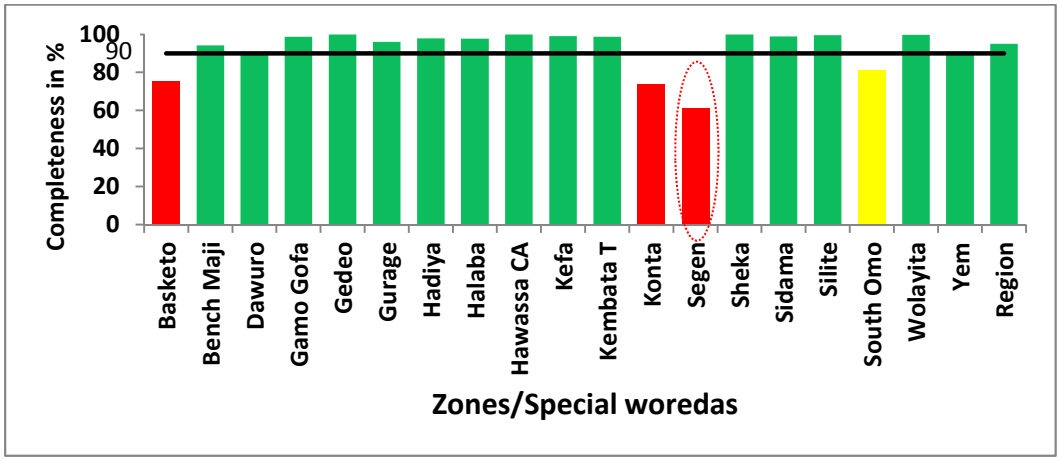


Figure 30: PHEM report completeness by zones/special woredas in SNNPR, Week 43, 2016

As it is depicted in figure 1 above, five zones namely Silite, Sheka, Gedeo, Wolayta and Hawassa town reported 100% while Segen zone, Konta and Basketo special woreda reported far below the target of report completeness in the week. These are the usual low performers that need special attention from RHB possibly frequent follow up through supportive supervision.

Malaria

In this week, a total of 34,525 suspected malaria cases were examined by RDT/microscopy and 5,082 cases were reported as confirmed malaria. Of which P. falciparum cases were 2,887 (57%) and P.vivax cases were 2,195 (43%). Overall, a total of 5,082 confirmed cases of malaria were reported in the region. Out of these cases, 5,048 (99.3 %) were outpatients and 34 (0.7%) were inpatients.

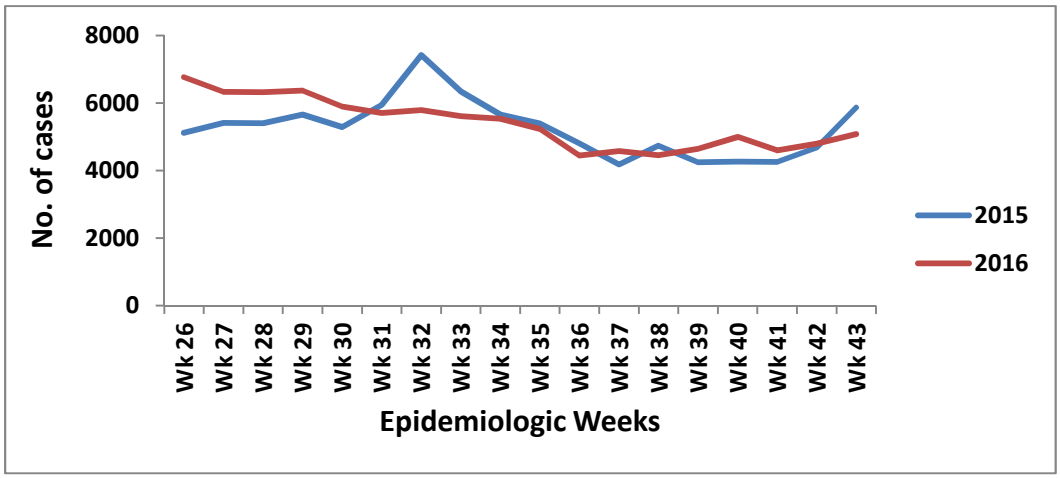


Figure 31: Trend of Malaria cases over the last 18 weeks in SNNPR, week 43, 2016

The number of malaria cases during the week increased by 288 compared to the previous week (a total of 4,794 total malaria cases were reported in week 42). As it is depicted in figure two above, the number of malaria cases is gradually decreased till week 41. However, the number of cases starting from week 42 is increasing as just in the same week of last year.

Basketo reported the highest malaria incidence rate with 107 cases per 100,000 populations in the week. The incidence rate has increased in the week in zone as compared to last week. South omo reported 106 cases per 100,000 populations in the week. Konta special woreda and Gamo Gofa reported the third and fourth highest cases with 71 and 51malaria cases per 100,000 populations in the week respectively.

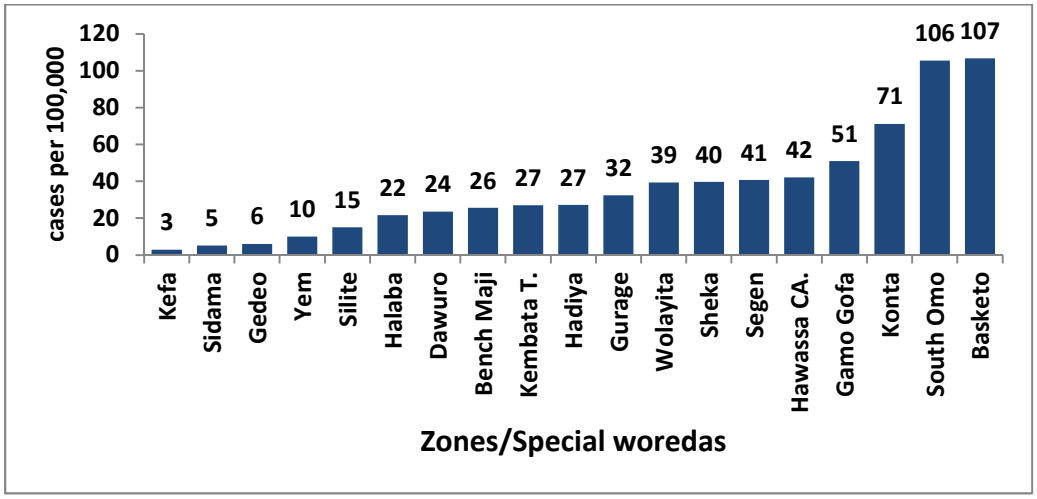


Figure 32: Malaria cases per 100,000 people by zones/Sp.woredas in SNNPR, week 43, 2016

Among woredas, Salamago woreda from South omo zone reported the highest malaria case in the week with 220 cases. The woreda reported 212 and 172 cases in week 41 and 42 respectively. Malie and Uba debretsehay are among top three woredas in the week with 191 and 150 cases respectively. (See fig 31).

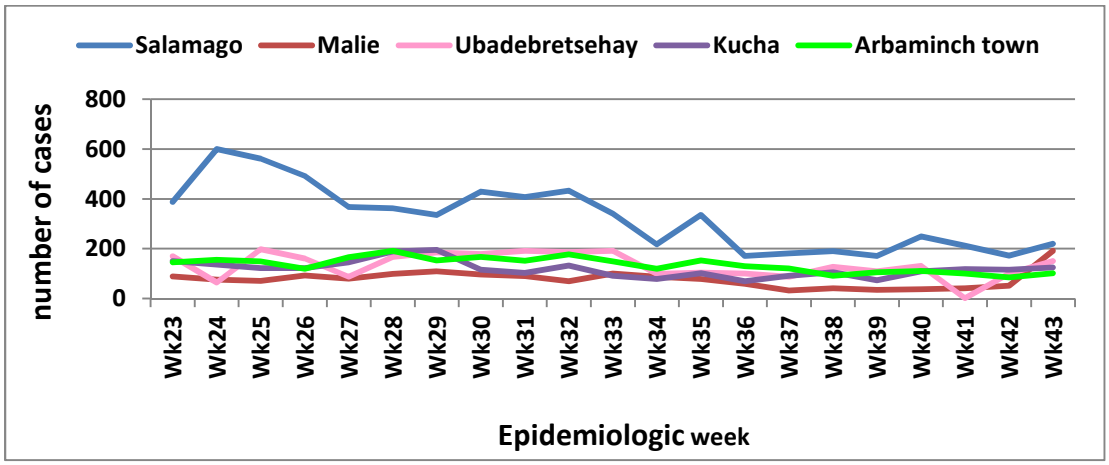


Figure 33: Trend of malaria cases in five highest reporting woreda in SNNPR, Week 43 in 2016

In the last one month, Salamago reported the highest malaria case in the region with 713 cases. Dasenech and Kucha woredas reported the second and third highest malaria case with 546 and 475 cases.

Table 21: Top 10 woredas with highest malaria case in last one month, SNNPR, week 43, 2016

S/N	Woreda name	Wk 40	Wk 41	Wk 42	Wk 43	Total
1	Salamago	250	212	172	220	854
2	Dasench	279	177	57	33	546
3	kucha	110	119	116	130	475
4	Shone taHO	117	97	98	90	402
5	Arba Minch TA	111	101	85	102	399
6	Uba Debretsahay	131	2	101	150	384
7	Zalla WoHO	95	100	84	86	365
8	Hawassa sub city	81	87	98	97	363
9	Abeshge	80	73	97	100	350
10	Daramalo WoHO	84	77	90	92	343

Meningitis

In this week, 11 suspected meningitis cases with zero death were reported in the region. The cases are reported from Dilla Hospital (4), Kele Hospital (2), Sodo Hospital (2) Hawassa referral Hospital (1), Bonga Hospital (1) and Durame district Hospital (1). The number of meningitis cases decreased by 3 compared to week 42 (14 cases were reported in week 38).

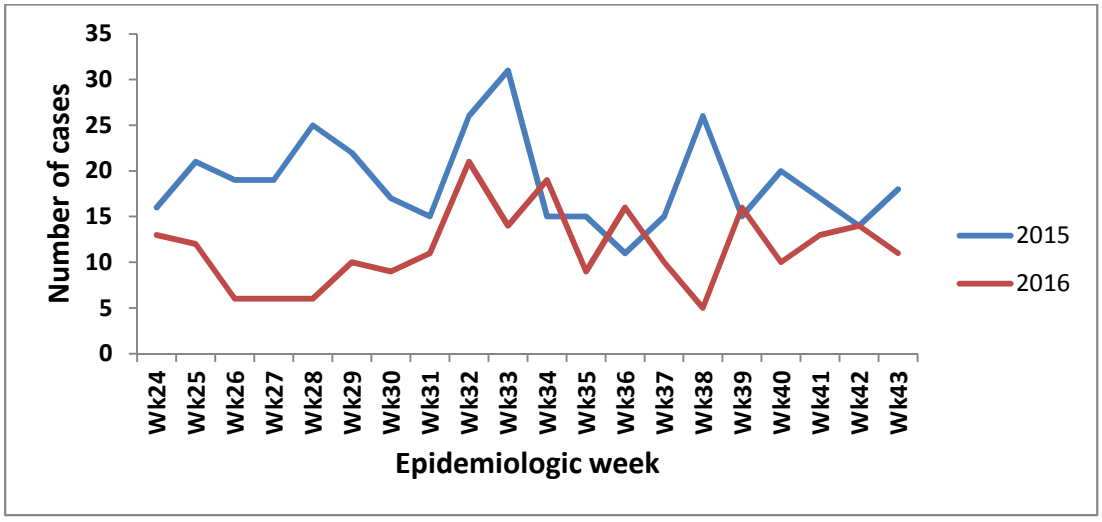


Figure 34: Trend of suspected meningitis cases over the last 20 weeks in SNNPR, week 43, 2016

Dysentery

There was a total of 453 reported cases of dysentery with zero death in this week. There was no case admitted to in patient department. The number of dysentery cases decreased by 47 as compared to the previous one week (500 cases were reported in week 42).

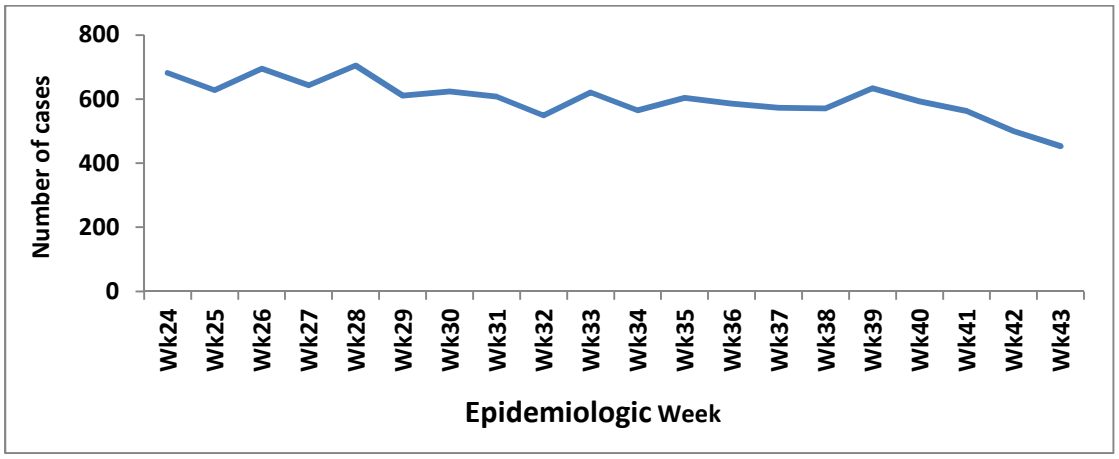


Figure 35: Trend of dysentery cases for the last 20 weeks, SNNPR, week 39, 2016.

During the week, Enemor Ener woreda reported the highest number with 24 dysentery cases followed by Hawassa city with 17 and Shebedino woreda with 15 cases respectively in the region.

Acute Malnutrition

A total of 740 acute malnutrition cases were reported in the region. Of these 638 were outpatient and 102 were inpatient cases with four deaths during the week. Three deaths were reported from Malie Woreda and one death from Karat Hospital.

In general, the number of acute malnutrition cases is decreased at the regional level by 17 when compared to week forty two (n= 757). As shown in figure 7, the outpatient (OTP) case increased in the week by 15 compared to week 42. However, the number of inpatient (SC) case has decreased by 32 in the week. As shown figure 7, OTP cases are increasing since week 38, in contrast to SC cases which are more or less stable.

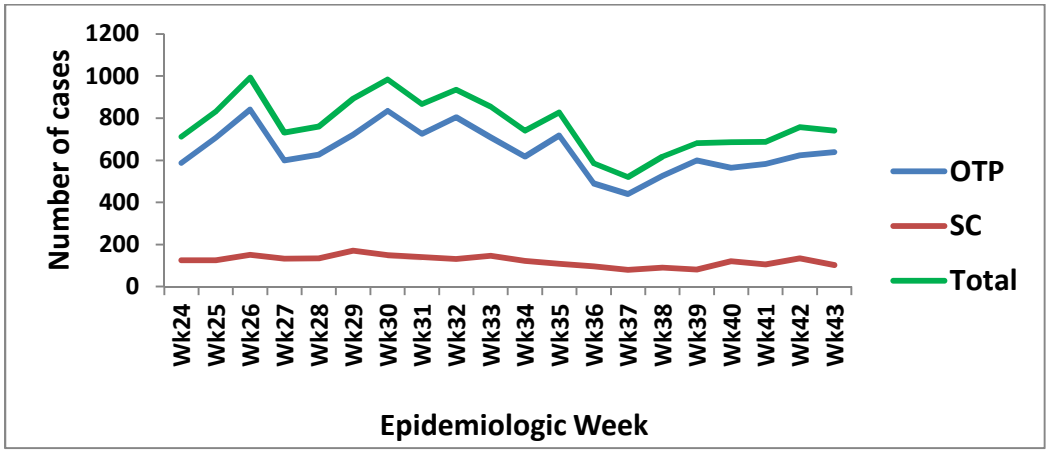


Figure 36: Trend of Severe Acute Malnutrition cases over the last 20 weeks in SNNPR, 2016

Figure 35 depicts that Sidama zone reported the highest number of SAM cases (n= 130) followed by Hadiya and Gamo Gofa zone with 118 and 90 case in the week.

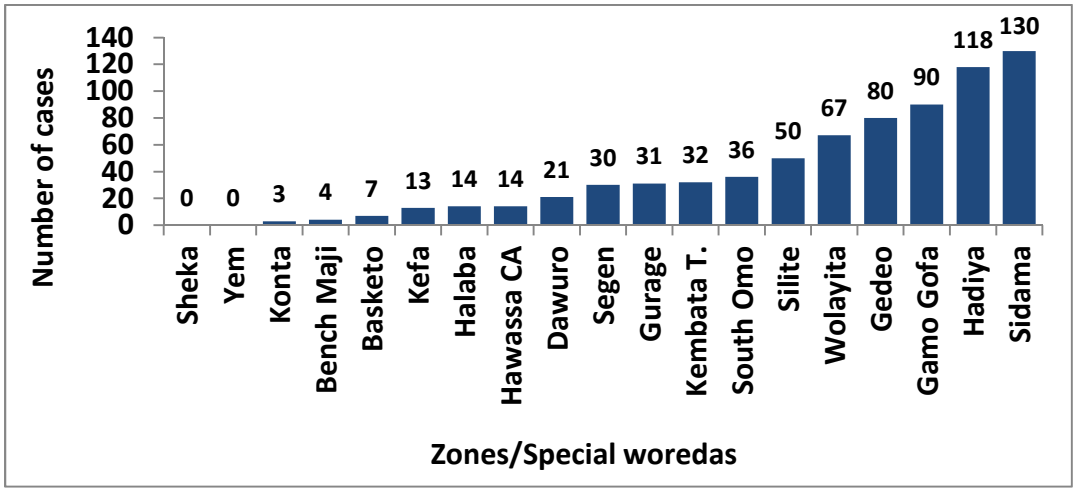


Figure 37: Number of malnutrition cases by zones/ Sp.woredas, SNNPR, week 43, 2016

When disaggregated by woreda, East Badawacho woreda, Wonago, and Kemba, are top threes for SAM cases during the week in the region with 26, 24, and 23 cases respectively.

Measles

In the week, 13 suspected measles cases were reported. 12 cases from Mirab Abaya woreda and 1from Gidole Hospital. Consequently, there is verified outbreak of measles in Mirab Abaya woreda since all the 5 samples sent to regional laboratory are positive for measles IgM.

AFP

Three AFP cases were reported in the region in the week. Chena woreda, Hawassa referal Hospital & Bonga Hospital have reported each of the cases .

AWD

Active AWD outbreak is ongoing in Wondo genet woreda, Hawssa town Meskan & Mihur Aklil woredas during the week.

NNT

One NNT case was reported from Gidole Hospital, Segen zone.

No case or death of Anthrax, yellow fever, AHI, SARS, Pandemic influenza, Viral Hemorrhagic Fever, Guinea worm, Smallpox, Rabies and Maternal death reported in the region in this reporting period.

Annexes

1. Questionnaire for Scabies Outbreak Investigation in Halaba special woreda, SNNPR

A. Identification

Interviewer's name _____ Phone number _____

Date of Data collection: _____

Region_____ Zone_____ District_____ Kebele _____ Got _____

Status of respondent: □ case □ control

B. Socio-demographic information

1. Age in years_____ in month _____

2. Sex □ Male □ Female

3. Ethnicity □Halaba □Silte □Amhara □Hadiya □Other/specify_____

4. Religion □ Orthodox □ Muslim □protestant □other/specify_____

5. Occupation □ Farmer □ Merchant □ Unemployed □Government employee

□Student □ Pastoralist □ NA □Other/specify _____

6. Educational status of case/control

□ Illiterate □ Primary □ Secondary □Tertiary □ NA

7. Parents of case/control educational status if the respondent is a child (< 7 years of age)

Mother □ Illiterate □ Primary □ Secondary □Tertiary

Father □ Illiterate □ Primary □ Secondary □Tertiary

8. Family size: _____

C. Questions related to knowledge of respondents about the disease

9. Do you know what scabies is? □ Yes □No

10. What do you think the cause of scabies?

□ Parasites □ consequence of curse □ witchcraft □ other/specify_____

11. How do you think Scabies is transmitted? You can pick more than one response.

□By direct skin to skin contact with ill person □ by sharing clothes of ill person

□ Hugging □Other/specify _____

12. How do you think Scabies can be prevented?

□ Personal hygiene & sanitation □Avoid contact with Scabies patient

□ don't know □ other/specify_____

13. Who do you think can be affected by Scabies?

□ Children less than 5 years old □ Children between 5-18 years

□ People over 18 years old □ People of any age group

□don't know □ other (specify):_____

14. Where did you go first when you get Scabies?

□ Health Facility □ Traditional Healers □ Holy Water □ Stayed at home

□other/Specify_____

15. How do you think Scabies can be cured?

□ Using modern medicine □Using traditional Medicine

□ Holly water □by feeding nutritious foods

□ Keeping the sick person indoor □ Other (Specify) _____

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

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

A. skin rash: □ Yes □ No D. relentless itching: □ Yes □No

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

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

17. Site of rash on the body (you can select as more responses as possible)

□ Flexor wrist surface □ interdigital spaces □ Umbilicus □ Belt line □ Abdomen

□ Intergluteal cleft □ buttocks □ Thighs □ Elbows □ Feet □ Ankles

□ Anterior axillary (underarm) folds. □ Other/specify_____

18. Date of rash onset ____/_____/_____

19. How long have you had a rash? (Duration of rash) _____days/months

20. Did you visit health facility for this illness? □ Yes □ No

21. If yes, date went to facility____/____/_____)

22. Treatment given □ Yes □ No

23. If yes, type of treatment

□5% Permethrin cream □ 25% benzyl benzoate lotion

□10%Sulfur ointment □ Ivermectine

24. Status of the patient after treatment has given

□ not completed the treatment yet □ patient cured □ Re-infected

□ Other/specify_____

25. How long were you ill before visiting the health facility? _____ days/hours

E. Questions related to risk factors

26. Were you in your home village when you first noticed you were ill? □ Yes □ No

27. If the answer is no for question number 26, where have you been?

Woreda _____ Keble _____ Got_____

28. Did you contact a person who has been infested with scabies? □Yes □ No

29. If yes, type of contact

□ sleeping together □ playing together □ Sharing clothes

□ Other/specify_____

30. Did you Share Clothes with a patient who has scabies □Yes □ No

31. What is the amount of water usually found in the house for drinking, cooking & personal hygiene in a daily bases?

□ Less than 20 liters □ 21-40 liters □ 41-60 liters □ 61-80 liters □ more than 81 liters

32. In order to fetch water, what is the walking distance from your house to the water source?

□ Less than 500 meters □ 500-1000 meters □ 1-5 kilometers

□ 5-10 kilometers □ more than 10kilometers

33. What is queueing time at a water point/source?

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

34. Do you have soap for personal hygiene & washing clothes whenever there is a need?

□Yes □ No

35. If yes, how often do you wash your clothes?

□ Two times per week □ once in a week □ once per 2 weeks

□ Once in a month □ Other/specify_____

36. How often do you shower?

□ Two times per week □ once in a week □ once per 2 weeks

□ Once in a month □ Other/specify_____

37. If your answer for question number 30 is no, what is the reason? _____

_____

38. How often do you change your clothes/wears?

□ Two times per week □ once in a week □ once per 2 weeks

□ Once in a month □ Other/specify_____

39. If yes, at what occasions/times do you wash your hands?

_____

40. What is the area of the house where the respondent is living (in meter square)?

_____

41. Are you living in an area/kebele affected by flood? □Yes □ No

42. If yes, was your home affected by the flood? □Yes □ No

43. What was the damage in your livelihood that was caused by the flood?

_____

_____

2. Questionnaire for typhoid fever surveillance system evaluation

Section one :- ZONAL LEVEL

Region _____ Zone _____

Respondent's name _____ position_____ years of experience in PHEM _____Phone number _____ e-mail_____

Total population _____ Male_____ Female_____

General

1. How many surveillance officers are there? _____. How many supposed to be? _____
2. If no, reason out _____
3. Are there a national manual/ PHEM guideline for surveillance?
   1. Yes 2. No
4. Are they distributed to the woredas? 1. Yes 2. No

Case Detection and Registration

1. Do you have standard case definitions for the Country's priority diseases like typhoid fever?
   1. Yes 2. No 3. Unknown 4. Not applicable
2. If the answer is yes for Q 1; observe the presence of the standard case definition for each priority disease. (Seven weekly and 14 immediately reportable diseases):

   _____

   _____

Data reporting

1. Number of health facilities expected to report in the zone:- Hospitals_____, health centers_____ Health posts_____, private clinics_____, NGOs_____, Others_____
2. Is there recommended reporting forms of surveillance data in the zone at all times over the past 12 months?
   1. Yes 2. No 3. Unknown 4. Not applicable
3. Have you lacked appropriate surveillance forms at any time during the last 12 months?
   1. Yes 2. No 3. Unknown 4. Not applicable
4. What are the reporting entities for the surveillance system? (Multiple response treated equally):
   1. Public health facilities 2. NGO health facilities 3. Military health facilities 4. Private health facilities
   5. Others (Specify) _____
5. Was there any report of the immediately reportable diseases in the past 1 month?
   1. Yes 2. No
6. If yes, for Q 5, with in what time is the report received after detection of the diseases?
   1. Less than 1 hour 2. 2-24 hour 3. 1- 2 days 4. 3- 7 days 5. After 1 week
7. How do you report weekly, monthly and other information to higher level?
8. 1. E-mail, 2. Telephone, 3. Fax 4. Radio 5. other (specify)_____
9. Number of districts that have means for reporting to next level by
   1. E-mail___ 2. Telephone_____3. Fax_____ 4. Radio_____ 5. other (specify)_____
10. Do all woredas have access to computers and modems? 1. Yes 2. No Other(specify)_____

    _____
11. Did you have address of regional PHEM officers?

    1. Yes 2. No

12. Availability of data management tools (Circle that applies)
    1. Case-based surveillance reporting forms 2. Lab-specimen-based surveillance reporting forms 3. Line lists for use in outbreaks 4. Tables for recording summary totals 5. Routine weekly reporting forms 6. Graphs for time analysis of data 7. Maps for place analysis of data 8. Charts for person analysis of data
13. How frequently are you communicating with the regional PHEM officers on emergencies and other daily activities?
    1. Daily 2. Weekly 3. Every 2 week 4. Monthly 5. Quarterly 6. Every 6 month 7. Yearly 8. Others (specify)_____
14. Do you have address of woredas/health facility PHEM officers?
    Yes/ No (if yes observe the list of addresses of PHEM officers and health facilities focal persons) _____
15. How frequently are you communicating with the woredas/health facility PHEM officers/ focal person on emergencies and other daily activities?
    1. Daily 2. Weekly 3. Every two weeks 4. Monthly 5. Quarterly 6. Bi-annual 7. Yearly 8. Others (specify)_____
16. When are you expected to send weekly report to the Regional PHEM unit? Every
    1. Monday 2. Tuesday 3. Wednesday 4. Thursday 5. Friday 6. Saturday 7. Sunday 8. I don't know
17. When are you expected to receive weekly report from woredas /health facilities?
    1. Monday 2. Tuesday 3. Wednesday 4. Thursday 5. Friday 6. Saturday 7. Sunday 8. I don't know
18. How is the Zone communicating the woredas/health facility PHEM officers in case of immediately reportable diseases?
    1. By e-mail 2. By phone 3. By fax 4. Regular weekly report 5. Others (specify)_____
19. Did you send summary or short report to the administrative /program owner or other responsible organs on planning, prevention and control activities addressing important issues at community level that have arisen through the surveillance system?
    1. Yes 2. No
20. If answer for Q 17 is yes to whom did you send? _____
21. If you faced any problems on communicating and reporting, list them
    _____
    _____
    _____
22. How do you manage the problem you faced?
    _____
    _____

Data analysis

1. Had you trained on surveillance system/ PHEM structure/ PHEM basic level?
   1. Yes 2. No
2. If answer for Q of 1 is yes
   a. when_____
   b. Topic_____
      _____
      _____
   c. For how long_____
3. Did you give any onsite training / orientation about surveillance system for the woredas or health facility PHEM focal persons?

1. Yes 2. No
(If yes observe any documents)

_____

4. How many woredas have permanently assigned surveillance officer or focal person? _____
5. How many of them trained on surveillance and epidemic management? _____
6. If no permanently assigned surveillance officer or focal person, how surveillance activities were done at woreda level? _____
7. Was data compiled and registered?
   1. Yes 2. No
   (If yes observe documents) _____
8. Do you check data quality and eventually clean them
9. Did you have computer on your department (PHEM unit)? 1. Yes 2. No
   1. Yes 2. No
10. If yes specify the type Desktop/ Laptop
11. What is the data entry and compilation instrument?
    1. Manual 2. Computer 3. Other (specify) _____
12. Did you have computer skill on
    1. Ms. word 2. Ms. excel 3. MS power point 3. Epi-info 3. Other (specify)
    _____
13. Did you analyze data of the surveillance system (cased based, routine, outbreak ….)?
    1. Yes 2. No
14. If answer for Q 13 is yes, observe whether or not data is analyzed by time, place and person
15. If you analyze surveillance data how frequently?
    1. Weekly 2. Every two week 3. Monthly 4. Quarterly 5. Every 6 month 7. Annually 8. No regular time
16. Did you perform trend analysis for priority diseases?
    1. Yes 2. No

17. If yes for Q #15, observe and list the diseases which has line graph

_____
_____

18. Did you produce weekly/monthly/Quarterly/Annual summaries in tables, graphs or maps? 1. Yes 2. No
19. If yes, observe_____
20. Did you have denominators for data analysis?
    1. Total population 2. Male 3. Female 4. Under 5 5. Population by woreda 6. Hard to reach area population
21. Did you notify the results of your analysis to the higher level PHEM?
    1. Yes 2. No
22. Did you notify the results of your analysis to the lower level PHEM?
    1. Yes 2. No
23. If answer for Q #18 and 19 is No, what is the reason?
    1. Lack of knowledge 2. Shortage of time 3. Less attention to data analysis 4. Shortage of materials 5. Analysis is not familiar 6. Negligence 7. Other (specify)
    _____

Outbreak Investigation

1. How many outbreaks were occurred in 2008 EFY? _____
2. How many of them were investigated _____
3. List the diseases _____
4. Do you have outbreak investigation check list?

1. Yes 2. No

5. If all outbreak not investigated; what was the possible factors not to investigate?

_____

_____

6. Where was laboratory confirmation of cases done?
   1. Regional laboratory 2. Hospital 3. EPHI 4. Health center 5. Contracted private laboratory 5. Other (Specify) _____
7. Who was responsible to investigate an outbreak?
   1. Rapid response team (RRT) 2. Staffs of woredas health office 3. Experts organized randomly 4. Health facility staffs 5. Other (specify) _____

Fill the table below for question #2

Name of out break	Place(Kebele/woreda	NO of cases			NO of deaths			Start date of the out break	Investigation date
		M	F	U5	M	F	U5		

8. Had you faced any challenge in outbreak investigation in 2008 EFY?
   1. Yes 2. No
9. If answer for Q 8 is yes,
   1. list the challenges

      _____

      _____

      _____
   2. List the alternatives that you take to tackle the challenges

      _____

      _____

      _____

Epidemic preparedness (relevant for epidemic prone diseases)

1. Do you have plan for epidemic response and preparedness?
   1. Yes 2. No
   If yes observe _____
2. Does EPRP supported by budget? 1. Yes 2. No
3. If yes, how much is allocated? _____
4. Was there an emergency stock of drugs and supplies at all times in the past 1 year?
   1. Yes 2. No
   If yes observe any document for evidence _____
5. If answer for Q 4 is No, how did you control epidemics? _____
6. Had you experienced shortage of drugs, vaccines and supplies in 2008EFY?
   1. Yes 2. No
7. Do you have multi sectoral emergency preparedness and response task force committee?
   1. Yes 2. No 3. Not applicable (check)
8. If Yes for Q 7, in what frequency did the task force meet during outbreaks? _____

9. Was Rapid response team established at zonal level?
   1. Yes 2. No
10. Did the Rapid response team have regularly scheduled meeting time during epidemics?
    1. Yes 2. No
    Observe minute book or other document _____
11. How many woredas have established Rapid Response Team? _____
12. Did you have case management protocol for epidemic prone diseases (typhoid fever)?
    1. Yes 2. No 3. Not applicable (check)
13. Were partners working together with your office on emergencies?
    1. Yes 2. No
14. If answer for Q 14 is yes, what type of supports did they give to your office?
    _____
    _____
15. Was there a budget for epidemic response in the last year?
    1. Yes 2. No
16. Had you a car assigned for emergencies (PHEM)?
    1. Yes 2. No 3. Not functional
17. If answer for Q 19 is NO, how did you address emergencies?
    _____
    _____
    _____

18. Had you faced any Challenges on epidemic preparedness and response in 2008EFY?
    1. Yes 2. No
19. If answer for Q 22 is yes,
    1. List the challenges
       _____
       _____
       _____
    2. What measures did you take to tackle the challenges?
       _____
       _____
       _____

Response to epidemics

1. Does the zonal health office responded or epidemics within 48 hours of notification of most recently reported outbreaks?
   1. Yes 2. No
   Observe any documents _____
2. Were epidemic management committees evaluating their epidemic preparedness and response activities during the past year?
   1. Yes 2. No
   Check written document _____

Supervision and Feedback

1. Did you have supervision plan in 2008 EFY?
   1. Yes 2. No
   Check documents _____
2. If answer for Q 1 is No, how did you supervise?
   _____
   _____

3. If Q #1 is yes, did you supervise the woredas and health facilities?
   1. Yes 2. No
4. If Q #3 is No, what is the reason?

   _____
   _____
5. If Q #3 is yes, how many times did you supervise each woredas and health facilities in 2008 EFY?
   1. Woreda health office _____
   2. Health facility _____
6. Had you received supervision from regional PHEM case team in the past year or currently? 1.
   1. Yes 2. No
7. If Q #6 is yes, how many times in 2008 EFY? _____
8. Did you have regular supervision checklist?
   1. Yes 2. No
   If yes observe it _____
9. If Q #8 is No, how did you supervise the woredas and health facilities?

   _____
   _____
10. Did you send feedback of your supervision findings to the woredas and health facilities which commenting/ indicating their strong and weak sides?
    1. Yes 2. No
    Check _____
11. If Q #10 is No, why?

    _____
    _____
12. If answer for Q #10 is yes, for how many woredas and health facilities and sessions did you send a feedback in 2008 EFY?
    1. Woreda _____
    2. health facilities _____
13. Had you received feedback from higher level supervisors in 2008 EFY?
    1. Yes 2. No
14. If Q #13 is yes, how many feedbacks did you received in 2008 EFY? _____
15. Had you faced any challenge on supervision and feedback in 2008 EFY?
    1. Yes 2. No
16. If answer for Q #15 is yes,
    1. List the challenges

       _____
       _____
       _____
    2. List the measures that you take to tackle the challenges

       _____
       _____

Surveillance

1. Do you have a computerized surveillance network at this level?
   1. Yes 2. No 3. Not applicable

Budget for surveillance

1. Is there a budget line for surveillance in the zonal Health office budget?
   1. Yes 2. No. 3. Not applicable
2. If yes, what is the proportion: _____ %
3. How could surveillance be improved?

_____
_____

Section Two:- Questionnaire for Attributes and level of Usefulness:

1. What is the 2008 EFY Prevalence of typhoid fever in your zone?
   Number of OPD cases _____IPD cases_____ deaths _____
2. Does the surveillance system help?
   2.1.To detect outbreaks of typhoid fever early on time to permit accurate diagnosis?
   1. Yes 2. No
   2.2.To estimate the magnitude of morbidity and mortality related to typhoid fever including identification of factors associated with these diseases?
   1. Yes 2. No
   2.3. Permit assessment of the effect of prevention and control programs?
   1. Yes 2. No
   2.4.Observe (confirmation): interventions and diseases trends analyzed
   1. Available 2. Not available

Describe Each System Attributes:

A**. Simplicity:**

1. Is the case definition of typhoid fever easy for case detection by all level health professionals?
   1. Yes 2. No
2. The surveillance system allows all levels of professionals to fill data?
   1. Yes 2. No
3. Does the surveillance system help to record and report data on time?
   1. Yes 2. No
4. Does the surveillance system (Reporting format) have necessary information for investigation?
   1. Yes 2. No
5. How long it takes to fill the format?
   1. <5 minute 2. 10-15 minutes 3. >15 minutes
6. How long does it take to have laboratory confirmation of typhoid fever? _____

B. Flexibility:

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?
   1. Yes 2. No
2. How do you feel if new disease added to the surveillance system? _____
   _____
3. Is the system easy to add new variables?
   1. Yes 2. No
4. Is the surveillance system easy to integrate with other systems?
   1. Yes 2. No
5. Is the surveillance system easy to add new disease on report?
   1. Yes 2. No
6. Is the system easy to add new information technology?
   1. Yes 2. No

C. Data Quality: (Completeness of the reporting forms/and validity of the recorded data)

1. Are the reporting site / data collectors trained/ supervised regularly?
   1. Yes 2. No
2. Observe: Review the last months report of these diseases

1. Average number of unknown or blank responses to variables in each of the reported forms
   _____
   _____
2. Percent of reports which are complete (that is with no blank or unknown responses) from the total reports
   _____
   _____
3. Are all woredas reporting (including late report)?
   1. Yes 2. No
4. Percent of woredas that send report of each week in 2008 EFY _____
5. Are all facilities reporting?
   1. Yes 2. No
6. Percent of facilities that send report of each week in 2008 EFY _____

Total weekly reports received from woredas of 2008 E.F.Y. (Completeness)							
WHO epi. Wk	Total Gov. site expected	Total Gov. sites reported	Coverage	WHO epi. Wk	Total Gov. site expected	Total Gov. site reported	Coverage
WK 1				WK 27			
WK 2				WK 28			
WK 3				WK 29			
WK 4				WK 30			
WK 5				WK 31			
WK 6				WK 32			
WK 7				WK 33			
WK 8				WK 34			
WK 9				WK 35			
WK 10				WK 36			
WK 11				WK 37			
WK 12				WK 38			
WK 13				WK 39			
WK 14				WK 40			
WK 15				WK 41			
WK 16				WK 42			
WK 17				WK 43			
WK 18				WK 44			
WK 19				WK 45			
WK 20				WK 46			
WK 21				WK 47			
WK 22				WK 48			
WK 23				WK 49			
WK 24				WK 50			
WK 25				WK 51			
WK 26				WK 52			

D. Acceptability:

1. Do you think all the reporting agents accept and well engaged to the surveillance activities?
   1. Yes 2. No
2. If yes, how many are active participants (of the expected including all private clinics)? _____/_____
3. If No for Q #1, what is the reason for their poor participation in the surveillance activity? (Multiple response treated equally)
   1. Lack of understanding of the relevance of the data to be collected
   2. No feedback / or recognition given by the higher bodies for their contribution; i.e. no dissemination of the analysis data back to reporting facilities
   3. Reporting formats are difficult to understand
   4. Report formats are time consuming
   5. Other (Specify):_____
4. Were all participants using the standard case definition to identify cases?
   1. Yes 2. No
   If yes, what is your evidence _____
5. Were all the reporting agents send their report using the current and appropriate surveillance reporting format?
   1. Yes 2. No
6. If yes Q 5 observe the documents
   _____
7. Were all the health professionals aware about the surveillance system?
   1. Yes 2. No
   If yes how they aware_____

E. Sensitivity:

1. Number of health facilities by type that reported cases/deaths of typhoid fever in the 2008EFY Hospitals_____, health centers_____Health posts_____, private clinics_____, NGOs_____, Others_____
2. Total number of cases of typhoid fever that were captured by surveillance system in 2008EFY_____
3. Compare it with reported by HMIS in the same year_____

F. Representativeness:

1. What is the health service coverage of the zone? _____%
2. Do you think, the populations under surveillance have good health seeking behavior for these diseases?
   1. Yes 2. No
3. Was the surveillance system enabled to follow the health and health related events in the whole community?
   1. Yes 2. No
4. If answer for Q 3 is no, who do you think is well benefited by the surveillance system?
   1. The urban 2. The rural 3. both
5. If yes for Q 3, do you think that rural and urban communities are equally benefited in surveillance system?
   1. Yes 2. No
   If no why
   _____
   _____
6. Are all the Socio demographic variables included in the surveillance reporting format?
   1. Yes 2. No
7. If the answer for Q 6 is No, which
   1. Place
   2. Person

3. Time
4. Other (specify) _____

G. Timeliness

1. Are all woredas /health facilities reporting on time?
1. Yes 2. No

2. Percent of governmental health facilities (hospitals, health centers and health posts) woredas that report on time _____

3. Percent of health facilities that report on time _____

4. During outbreaks, what is the mean time between onset & reporting_____

Total weekly reports received from woredas of 2008 E.F.Y. (Timeliness)

WHO epi Week	Total Gov. site expected	Total Gov. site reported on time	Coverage	WHO epi Week	Total Gov. site expected	Total Gov. site reported on time	Coverage
WK 1				WK 27			
WK 2				WK 28			
WK 3				WK 29			
WK 4				WK 30			
WK 5				WK 31			
WK 6				WK 32			
WK 7				WK 33			
WK 8				WK 34			
WK 9				WK 35			
WK 10				WK 36			
WK 11				WK 37			
WK 12				WK 38			
WK 13				WK 39			
WK 14				WK 40			
WK 15				WK 41			
WK 16				WK 42			
WK 17				WK 43			
WK 18				WK 44			
WK 19				WK 45			
WK 20				WK 46			
WK 21				WK 47			
WK 22				WK 48			
WK 23				WK 49			
WK 24				WK 50			
WK 25				WK 51			
WK 26				WK 52			

H. Stability:

1. Was any new restructuring affected the procedures and activities of the surveillance of these diseases?
   1. Yes 2. No
2. Was there lack of resources that interrupt the surveillance system?

1. Yes 2. No

3. If yes what was it and how do you solve it
    1. Lacked resources

    _____

    _____

    2. How do you solved

    _____

    _____

4. Was there any time /condition in which the surveillance is not fully operating?
    1. Yes 2. No
5. If the answer yes for Q #4 When/what is the condition that makes the system not to function properly?
    _____

6. When the surveillance system is not fully operating?
    _____

    _____

    _____

7. What activities make the surveillance system is not fully operating?
    _____

    _____

    _____

Surveillance System Evaluation Questionnaire for Woreda Level

Respondent's name _____ position_____ years of experience in PHEM _____Phone number _____ e-mail_____

Total population _____ Male_____ Female_____

PART ONE

General

1. How many surveillance officers are there? _____. How many supposed to be? _____
2. If no, reason out _____
3. Are there a national manual/ PHEM guideline for surveillance?
    1. Yes 2. No
4. Availability of data management tools (Circle that applies)
    1. Case-based surveillance reporting forms 2. Lab-specimen-based surveillance reporting forms 3. Line lists for use in outbreaks 4. Tables for recording summary totals 5. Routine weekly reporting forms 6. Graphs for time analysis of data 7. Maps for place analysis of data 8. Charts for person analysis of data
5. Are they distributed to the health facilities? 1. Yes 2. No

Case Detection and Registration

6. Do you have standard case definitions for the Country's priority diseases like typhoid fever?
    1. Yes 2. No 3. Unknown 4. Not applicable

7. If the answer is yes for Q 1; observe the presence of the standard case definition for each priority disease. (Seven weekly and 14 immediately reportable diseases):

_____

_____

8. Who are sources of information about health events in the woreda?
   Public health facilities and hospitals 2. Private health facilities 3. NGO clinics 4. Others/specify_____

Communication and reporting system assessment

1. Do all health facilities have access to computers and modems? 1. Yes 2. No
   Other(specify)_____
2. Which communication material do you have?
   □ E-mail □ wired phone □ mobile □ fax □ other (specify) _____
3. Do you have addresses of health center PHEM focal persons?
   □ Yes □ No
4. How frequently you communicate with the Health center PHEM focal person on emergencies and other daily activities?
   □ Daily □ weekly □ every 2 week □ monthly □ quarterly □ every 6 month □ yearly
5. When are you expected to send weekly report to the zonal PHEM unit?
   □ Monday □ Tuesday □ Wednesday □ Thursday □ Friday □ Saturday □ Sunday
6. When are you expected to receive weekly report from HCs/HPs?
   □ Monday □ Tuesday □ Wednesday □ Thursday □ Friday □ Saturday □ Sunday
7. Did you send report to the administrative /program leaders or other responsible organs on emergency issues at community level that have arisen through the surveillance system?
   □ Yes □ No
8. If answer for Q8 is yes to whom did you send?

   _____

   _____

Assessment of availability of documents specific to typhoid fever surveillance

1. Is there a national manual for typhoid fever?
   □ Yes □ No
2. Do you have standard case definition for typhoid fever?
   □ Yes □ No
3. If yes Q. 3 was the case definition posted?
   □ Yes □ No
4. If answer for Q2 is No, for which disease(s) did you lack the case definition?

   _____
5. Is there a guide line for specimen collection, handling and transportation?
   □ Yes □ No

Data analysis, Computer skill and training assessment

1. Had you trained on surveillance system/ PHEM basic level training?
   □ Yes □ No
2. If answer for Q1 is yes
   1. When _____

2. Topic _____

3. For how long _____

3. Did you give orientation about surveillance system for HC and HP PHEM focal persons?
   □ Yes □ No
4. Do you have computer/ laptop/ desktop?
   □ Yes □ No
5. If yes Q. 4 is it functional?
   □ Yes □ No
6. How data entry and compilation was accomplished?
   □ Manual □ Computer
7. Do you have computer skill on
   □ Ms word □ Ms excel □ MS power point □ Epi-info
8. Do you analyze data of the surveillance system?
   □ Yes □ No
9. If answer for Q8 is yes how often?
   □ weekly □ every two week □ Monthly □ quarterly □every 6 month □ annually □ do not have regular time
10. Do you describe data by?
    □ time □ place □ person
11. Do you have denominators for data analysis?
    □ total pop □ male □ female □ <5
12. Do you notify the results of your analysis to the higher level PHEM?
    □ Yes □ No
13. Do you notify the results of your analysis to the lower level PHEM?
    □ Yes □ No

Epidemic preparedness and response assessment

1. Do you have plan for epidemic preparedness and response?
   □ Yes □ No
2. Do you have emergency stocks of drugs and supplies?
   □ Yes □ No
3. If yes Q 2 and 3 observe

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

   _____

   _____
5. Had you experienced shortage of drugs, vaccines and supplies in 2008 EFY?
   □ Yes □ No
6. Was rapid response team (RRT) built in your office?
   □ Yes □ No
7. Do the RRT have regularly scheduled meeting time during epidemics?
   □ Yes □ No
8. If yes Q.7 observe minute

   _____

9. Do you have case management protocol for typhoid fever & epidemic prone diseases?
   □ Yes□ No
10. Did your PHEM have multi sectorial emergency preparedness and response task force?
   □ Yes □ No
11. Were partners working together with your office on emergencies?
   □ Yes □ No
12. If answer for Q13 is yes, specify type of supports they gave?

   _____

   _____

13. Was there a budget for epidemic response?
   □ Yes □ No
14. Have you a vehicle assigned for emergencies (PHEM)?
   □ Yes □ No
15. If answer for Q14 is NO, how did you address emergencies?

   _____

   _____

Outbreak investigation and case confirmation assessment

1. Had you investigated any outbreak last year/ 2008 EFY?
   □ Yes □ No,
2. List if Q.1 yes

   _____

   _____

   _____

3. Do you have outbreak investigation check list for typhoid fever/other disease?
   □ Yes □ No
4. Where was laboratory confirmation of cases done?
   □ Regional lab □ Hospital □ EPHI □ HC
5. Who was responsible to investigate an outbreak?
   □ RRT □ HEWs □ Health Bureau staffs □ Health facility staffs □ other (specify)

   _____

6. Had you faced any challenge in outbreak investigation in 2008 EFY?
   □ Yes □ No
7. If answer for Q6 is yes,
   1. List challenges

      _____

      _____

      _____

   2. List alternatives that you take to overcome the challenges

      _____

      _____

      _____

Supervision and feedback assessment

1. Do you have supervision plan in 2008 EFY?
   □ Yes □ No
2. If answer for Q1 is yes, how often did you supervise?
   _____
3. Did you supervise the HCs and HPs according to your plan in 2008EFY?
   □ Yes □ No
4. If answer for Q3 is No, what was the reason?
   _____
   _____
5. Did you have regular supervision checklist?
   □ Yes □ No
6. If answer for Q6 is No, how did you supervise?
   _____
   _____
7. Were you supervised by higher level officers in 2008 EFY?
   □ Yes □ No
8. If yes Q.7 how many times you supervised by higher level in 2008 EFY?
   _____
9. Did you provide feedback of your supervision?
   □ Yes □ No
10. If answer for Q10 is No, why? _____
11. Had you received feedback from higher level supervisors in 2008 EFY?
    □ Yes □ No
12. If yes how many feedbacks did you received? _____
13. Had you faced any challenge on supervision and feedback?
    □ Yes □ No
14. If yes Q.14
    1. List challenges
    _____
    _____
    _____
    2. List alternatives that you take to overcome the challenges
    _____
    _____
    _____

PART-TWO

IS THE SURVEILLANCE SYSTEM HELP? (Multiple answer treated equally)

1. To detect outbreaks early on time to permit accurate diagnosis?
   □ Yes □ No
2. To estimate the magnitude of morbidity and mortality?
   □ Yes □ No

3. Permit assessment of the effect of prevention and control programs?
   □ Yes □ No

Description of Surveillance System Attributes:

A) Simplicity

1. Is the case definition easy for case detection by all level health professionals?
   □Yes □No
2. Does the surveillance system allow all levels of professionals to fill data?
   □Yes □No
3. Does the surveillance system help to record and report data on time?
   □Yes □No
4. Does the surveillance system have necessary information for investigation?
   □Yes □No
5. Does the surveillance system allow updating data on the cases?
   □Yes □No
6. How long does it take to fill the weekly report format?
   □<5 min □5 to 10 min □10 to15min □>15 min
7. How long does it take to have laboratory confirmation for typhoid fever? _____

B) Flexibility

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?
   □Yes □No
2. Do you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement?
   □Yes □No
3. Is the system easy to add new variables?
   □Yes □No
4. Is the surveillance system easy to integrate with other systems?
   □Yes □No
5. Is the surveillance system easy to add new disease on report?
   □Yes □No
6. Is the system easy to add new information technology?
   □Yes □No

C) Data quality

1. Are all reported forms complete?
   □Yes □No
2. If answer for Q1 is No, how many unfilled spaces are in your 2008EFY report? _____
3. Percentage of unknown or blank responses to variables from the total reports of 2008 EFY report
   _____
4. Percent of reports which are complete (that is with no blank or unknown responses) from the total reports of 2008 EFY?
   _____

5. Is the recorded data clear to read and understand?
   □Yes □No
6. If answer for Q5 is No, how many records are not clear/are difficult to understand in 2008 EFY report?

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

   _____

D) **Acceptability**

1. Do you think all the reporting agents accept and well engaged to the surveillance activities?
   □Yes □No
2. If yes, how many are active participants (of the expected)?

   _____
3. If No, what is the reason for their poor participation in the surveillance activity? (multiple answer treated equally)
   A. Lack of understanding on the relevance of the data to be collected
   B. No feedback given by the higher bodies for their contribution
   C. Reporting formats are difficult to understand
   D. Report formats are time consuming
   E. Other (specify): _____
4. Were all participants using the standard case definition to identify typhoid fever?
   □Yes □No
5. Were all the reporting agents send their report using the current and appropriate surveillance reporting format?
   □Yes □No
6. Were all HEWs & health professionals aware about the surveillance system?
   □Yes □No
7. Was HEWs send report on time?
   □Yes □No

E) **Representativeness**

1. Was the surveillance system enabled to follow the health and health related events in the whole community?
   □Yes □No
2. If answer for Q1 is no, who do you think is well benefited by the surveillance system?
   □urban □ rural □both
3. Are all the Sociodemographic variables included in the surveillance reporting format?
   □Yes □No
4. If the answer for Q3 is No, Specify which:
   a. Person _____
   b. Place _____
   c. Time _____
   d. Other (specify) _____

F) Sensitivity:

Number of health facilities by type that reported cases/deaths of typhoid fever in the 2008EFY Hospitals_____, health centers_____ Health posts_____, private clinics NGOs_____ Others_____

Total number of cases of typhoid fever that were captured by surveillance system in 2008EFY_____

Compare it with reported by HMIS in the same year_____

G) **Timeliness**

1. Are all reporting sites reporting on time on 2008 EFY?
   □Yes □No
2. Percent of reporting sites that report on time _____

H) Completeness

1. Did all reporting sites completely report in 2008EFY?
   □Yes □No
2. Percent of HPs that send report of each week in 2008 EFY _____

I) Stability

1. Was any new restructuring affected procedures and activities of the surveillance? □Yes □No
2. Was there lack of resources that interrupt the surveillance system?
   □Yes □No
3. If yes Q. 2 lists the shortage of resources to interrupt the surveillance system?
   _____
   _____
4. Was there any condition in which the surveillance is not fully operating?
   □Yes □No
5. If the answer for Q3 is yes, explain why?
   _____
   _____
   _____

Surveillance system evaluation Questionnaire for Health Center

Woreda name _____

Health center name _____Catchment population _____

Respondent(s) _____Address: Cell phone no. _____ e-mail _____

PART ONE

Communication and reporting system assessment

1. Which communication material do you have?
   □E-mail □wired phone □mobile □fax
   □other (specify) _____

2. How frequently you communicate with the Health office PHEM officer on emergencies and other daily activities?
   □Daily □weekly □every 2 week □monthly □quarterly □every 6 month □yearly □others (specify) _____

3. Do you have address of HEWs?
   □Yes □No
4. How frequently you communicate with the HEWs on emergencies and other daily activities?
   □daily □weekly □every 2 week □monthly □quarterly □every 6 month □yearly □others (specify) _____
5. When are you expected to send weekly report to the Health office PHEM Unit?
   □Monday □Tuesday □Wednesday □Thursday □Friday □Saturday □Sunday
6. When are you expected to receive weekly report from HPs?
   □Monday □Tuesday □Wednesday □Thursday □Friday □Saturday □Sunday
7. How is the Health Center communicating the HEWs in case of immediately reportable diseases?
   □by phone □regular weekly report □others
8. Did you send summary or short report to the administrative /program leaders or other responsible organs on emergency issues at community level that have arisen through the surveillance system?
   □Yes □No
9. If answer for Q9 is yes to whom did you send?
   _____
   _____
   _____

Assessment of availability of Surveillance Documentation, Registers and Forms

1. Do you have National PHEM Guide line?
   □Yes □No
2. Do you have standard case definition for typhoid fever?
   □Yes □No
3. Was the case definition posted?
   □Yes □No
4. If answer for Q2 is No, for which disease(s) did you lack the case definition?
   _____
   _____
5. Do you have case based reporting formats for out breaks?
   □Yes □No
6. Was there national manual for surveillance?
   □Yes □No
7. Was there guide line for specimen collection, handling and transportation to the next level?
   □Yes □No
8. Do you have weekly IDSR reporting format?
   □Yes □No
9. Do you have line list for reporting outbreaks?
   □Yes □No

Data analysis, Computer skill and training assessment

1. Had you trained on surveillance system?
   □Yes □No
2. If answer for Q1 is yes:
   a. When? _____
   b. Topic?
      _____
      _____
      _____
   c. For how long? _____
3. Did you give any onsite orientation about surveillance system for HEWs?
   □Yes □No
4. Was data compiled?
   □Yes □No
5. Do you have computer?
   □Yes □No
6. It is functional)?
   □Yes □No
7. How the data entry and compilation is accomplished?
   □Manual □Computer
8. Do you have computer skill on
   □Ms word □Ms excel □MS power point □Epi-info
9. Did you analyze data of the surveillance system?
   □Yes □No
10. If answer for Q9 is yes, did you describe data by
    □time □place □person
11. Do you have denominators for data analysis?
    □total population_____ □male_____ □female_____ □<5_____
12. Please indicate the frequency of your data analysis?
    □weekly □every two week □Monthly □quarterly □every 6 month □annually
    □No regular time
13. Did you notify the results of your analysis to the higher level PHEM?
    □Yes □No
14. Did you notify the results of your analysis to the lower level PHEM?
    □Yes □No

Epidemic response and preparedness assessment

1. Do you have plan for epidemic response and preparedness?
   □Yes □No
2. Do you have emergency stocks of drugs and supplies?
   □Yes □No
3. If answer for Q2 is No, how did you control epidemics?
   _____
   _____
4. Had you experienced shortage of drugs, vaccines and supplies in 2008 EFY?

□Yes □No

5. Was Rapid response team (RRT) built in your HC?
   □Yes □No
6. Did the RRT have regularly scheduled meeting time during epidemics?
   □Yes □No
7. Did you have case management protocol for epidemic prone diseases?
   □Yes □No
8. Were partners working together with your HC on emergencies?
   □Yes □No
9. If answer for Q8 is yes, what type of supports did they give to your HC? _____
   _____
10. Was there a budget for epidemic response?
    □Yes □No
11. Who had the authority to mobilize the emergency finance?
    □Health center head □experts □other (specify) _____
12. Had you a car assigned for emergencies (PHEM)?
    □Yes □No
13. If answer for Q12 is NO, how did you address emergencies?
    _____
    _____

Outbreak investigation and case confirmation assessment

1. Had you investigated any outbreak in 2008 EFY?
   □Yes □No,
   List if any _____
2. Do you have outbreak investigation check list?
   □Yes □No
3. If answer for Q 2 is No, how did you know possible factors for the outbreak?
   _____
   _____
4. Where was laboratory confirmation of cases?
   □regional lab □Hospital □EPHI □HC
5. Who was responsible to investigate an outbreak?
   □RRT □HEWs □staffs of Health office □experts organized randomly □health facility staffs □other (specify)
   _____
6. Had you faced any challenge in outbreak investigation in 2008 EFY?
   □Yes □No
7. If answer for Q6 is yes,
   a. List the challenges
      _____

_____

_____

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

_____

_____

_____

Supervision and feedback assessment

1. Did you have supervision plan in 2008 EFY?
   □Yes □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?
   □Yes □No
4. If answer for Q1 is No, what is the reason?
   _____
   _____
5. If answer for Q1 is yes, how many times did you supervise each HP in 2008 EFY?
   _____
   _____
6. Did you have supervision checklist?
   □Yes □No
7. If answer for Q6 is No, how did you supervise the HPs?
   _____
   _____
8. Were you supervised by higher level officers in 2008 EFY?
   □Yes □No
9. If answer for Q8 is yes how many times in 2008 EFY?
   _____
10. Did you send feedback of your supervision to the health posts?
    □Yes □No
11. If answer for Q11 is No, why?
    _____
    _____
12. Had you received feedback from higher level supervisors in 2008 EFY?
    □Yes □No
13. Had you faced any challenge on supervision and feedback in 2008 EFY?
    □Yes □No, if yes, specify
    _____
    _____

PART-TWO: IS THE SURVEILLANCE SYSTEM of HELP?

1. To detect outbreaks early on time to permit accurate diagnosis?
   □Yes □No
2. To estimate the magnitude of morbidity and mortality?

□Yes □No

3. Permit assessment of the effect of prevention and control programs?
   □Yes □No

Description of Surveillance System Attributes:

A. Simplicity:

1. Is the case definition easy for case detection by all level health professionals?
   □Yes □No
2. Does the surveillance system allow all levels of professionals to fill data?
   □Yes □No
3. Does the surveillance system help to record and report data on time?
   □Yes □No
4. Does the surveillance system have necessary information for investigation?
   □Yes □No
5. Does the surveillance system allow updating data on the cases?
   □Yes □No
6. How long does it take to fill the format?
   □<5 min □5 to 10 min □10 to15min □>15 min
7. How long does it take to have laboratory confirmation for typhoid fever?

B. Flexibility

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty?
   □Yes □No
2. Did you think that any change in the existing procedure of case detection and reporting formats will be difficult to implement?
   □Yes □No,
3. Add your explanation

   _____
   _____
   _____

4. Is the system easy to add new variables?
   □Yes □No
5. Is the surveillance system easy to integrate with other systems?
   □Yes □No
6. Is the surveillance system easy to add new disease on report?
   □Yes □No
7. Is the system easy to add new information technology?
   □Yes □No

C. Data quality

1. Are all reported forms Complete?
   □Yes □No
2. If answer for Q1 is No, how many unfilled spaces are in your 2008 EFY report?
   _____

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

   _____

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

   _____

5. Is the recorded data clear to read and understand?
   □Yes □No
6. If answer for Q5 is No, how many records are not clear/are difficult to understand in 2008 EFY report?

   _____

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

   _____

   _____

D. **Acceptability**

1. Do you think all the reporting agents accept and well engaged to the surveillance activities?
   □Yes □No
2. If yes, how many are active participants (of the expected)? _____
3. If No, what is the reason for their poor participation in the surveillance activity? (multiple answer treated equally)
   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 (specify): _____
4. Were all participants using the standard case definition to identify cases?
   □Yes □No
5. Were all the reporting agents send their report using the current and appropriate surveillance reporting format?
   □Yes □No
6. Were all the health professionals aware about the surveillance system?
   □Yes □No
7. Was all HEWs send report on time?
   □Yes □No

E. **Representativeness**

1. Was the surveillance system enabled to follow the health and health related events in the whole community?
   □Yes □No
2. If answer for Q1 is no, who do you think is well benefited by the surveillance system?
   □Urban □Rural □both
3. Are all Sociodemographic variables included in surveillance reporting format?
   □Yes □No
4. If the answer for Q3 is No, which

a. Place
b. Person
c. Time
d. Other (specify) _____

F. Sensitivity:

1. Number of health facilities by type that reported cases/deaths of typhoid fever in the 2008EFY Hospitals_____, health centers_____ Health posts_____, private clinics NGOs_____ Others_____

2. Total number of cases of typhoid fever that were captured by surveillance system in 2008EFY_____
3. Compare it with reported by HMIS in the same year_____

G. **Timeliness**

1. Are all reporting sites reporting on time?
   □Yes □No
2. Percent of reporting sites that report on time _____

H. Completeness

1. Are all reporting sites reporting?
   □Yes □No
2. Percent of HPs that send report of each week in 2008 EFY _____

I. Stability

1. Was any new restructuring affected the procedures and activities of the surveillance? □Yes □No
2. Was there lack of resources that interrupt the surveillance system?
   □Yes □No
3. Was there any time /condition in which the surveillance is not fully operating?
   □Yes □No
4. If yes, explain why?

_____
_____
_____

3. Food Security & Agricultural Assessment Checklist, Meher 2016

ZONE/REGION NAME	
DATE ASSESSMENT STARTED & COMPLETED	

TEAM MEMBERS

NAME	**AGENCY**	**POSITION**

1. OBJECTIVES

To evaluate the production of the ***Meher*** and pastoral season and its impact on food and nutrition security and livelihoods in Ethiopia's cropping and pastoral areas

- To identify ***woredas*** which as the result of the hazard induced disasers will need relief assistance and in those ***woredas*** estimate the size of the population in need and duration of assistance required.
- To evaluate emergency agricultural interventions including seeds, livestock feed, livestock medicines and vaccine, destocking – commercial and slaughter, including type, size and duration of intervention
- To evaluate emergency and early recovery agricultural, health and water interventions including seeds, livestock vaccine, medicines, and feed support as well as health and water requirements – including type, size and duration of intervention

J. TERMS OF REFERENCE

Using rapid assessment methods:

- compile *Meher* season crop data – area planted, area replanted, harvest levels compared to last year and forecast harvest for crops still in the ground
- collect 2014 and 2015 staple food price data and compare with 2016 similar months prices
- collect trend information on livestock production and health - unusual disease outbreaks and mortality – and migration
- collect livestock price data – milk, meat and livestock – and compare with 2014, 2015 and 2016
- collect information on the current situation (i.e. output indicators): the results of recent nutrition status surveys, other indicators of malnutrition, unusual disease outbreaks, mortality data, abnormal patterns of behaviours (e.g. entire household migration

K. METHODOLOGY

During the seasonal assessment, data on cropping and livestock will be collected from focus group discussions and key informant interviews. Price data (including staple prices, livestock and livestock product prices, cash crop prices and labour prices), inflation, changes in availability of labour, changes in other incomes sources will also be collected.

Procedure:

- The teams will be briefed by federal/ regional NDRMC/DPPB officials before visiting selected zones and woredas
- Semi-structured interviews will be held with regional/zonal and woreda officials to discuss the food
- Food security situation and gather information on the Meher production, food prices, livestock production and livestock prices Semi-structured interviews will be held with crop and livestock traders and others who have a good knowledge of markets were conducted.
- Complementary information was also collected through field observations, 1-2 focus group discussions per woreda (including community leaders and model farmers) and where feasible through discussions with NGO staff
- Additional sources of information may include Livelihood Baselines and LEAP intermediate products (rainfall estiamtes; yield reduction;WRSI)
- The teams conducted 3-4 days of analysis and report writing. This was followed by debriefing and presentation to the regional officials

Whilst data will be collected from all woredas in the zones visited, the following woredas were visited by the team.

No	***Woredas* visited**	**% of *Belg* crop proportion**	**% of *Meher* crop production**
1			
2			
3			
3			
4			
5			

L. BACKGROUND INFORMATION

Using the livelihood zone profiles for the zones and woredas visited – provide a brief description for the area being assessed *(Summaries for each livelihood zone are provided in a separate word document – so that the team can cut and paste the information required)*

M. BRIEF SUMMARY OF THE ASSESSMENT

Give a summary of the assessment findings (half a page to a page)

This should include:

- What are the main conclusions of the assessment – what are the prospects for food security in the zone/region?
- Is relief assistance needed in the zone/region? If so, what are the main reasons for the need (e.g., shortage of rains, hailstorm, disease, internally displaced people etc.)
- Highlight which woredas are in need of relief assistance.
- How many people are likely to need food assistance in the zone/region as a whole? For how long and which months?
- Is there any data that suggests that the current situation is particularly severe (e.g. unusual migration, current malnutrition data)?

N. WEATHER CONDITIONS

Description of weather conditions: Compare the rainfall in the current season to the long-term average for the area – using either past rainfall measurement where available or long-term average of Rain Fall Estimate (RFE) from satellite imagery and NMA reports. Discuss:

- the onset,
- quantity,
- distribution,
- duration and cessation of the rains.

Describe any adverse weather conditions such as frost, hailstorm, unseasonal rain, excessive rain, flood, dry spell, etc, and include their timing, location and general impact on livelihoods. **Refer the NMA seasonal outlook and assessesment reports and sattelaties data (USGS)**

O. *Meher 20*16 CROP PRODUCTION PROSPECTS

In assessing current crop production prospects, consideration should be given to both food and cash crops, including roots and tubers, enset and cash crops (e.g. coffee, chat and vegetables) where appropriate. COLLECT DATA FOR MAJOR CROPS GROWN IN THE AREA AND REFER TO THE KEY PARAMETER PAGE TO HELP YOU UNDERSTAND THE SHARE OF EACH CROP

a. PLANTED AREA AND TIMELINESS OF PLANTING

How does area planted for the current season crops compare with the same season last year and if data aviaalbe, with the average for the lat 5 years?

- Indicate the area planned and actually planted for the major crops and compare with the average of the area or previous year
- Was planting generally undertaken on time? What was the normal planting window of different crops in the season? If there were delays, in planting where it happened and what was the main reasons? Which crops were the most affected and by how much?
- What is the total area in hectare planted by *Meher* crops this year? How do you rate the status of area planted as compared to normal? Which crops increased/decreased in area planted? What are the main reasons for significant change in area planted this year as compare to average, if any?

b. CROP PRODUCTION PROSPECT

Make a judgement on the prospects for overall production of the main food and cash crops in the current season.

- **Types of crops (both cash and food)** - What are the main crops normally cultivated in this area? What is their contribution to the seasonal and annual crop production normally obtained? Is there a change in type of crops cultivated this season? Why?
- **Crop stages** – What was the normal crop stage at the same time of normal year? At what phonological stages are the crops in the field currently? How was the overall performance of agricultural activities such as land preparation, planting, weeding, and harvesting, etc)
- **Crop pest and diseases** – Was there crop pests and disease outbreaks? What pests and/or diseases are? Which crop highly affected and to what extent (estimated crop yield damaged, hectares of land affected)? At what stage were crops when pest/disease outbreak occurred? Which areas affected? What measures taken and how was its effectiveness? Get an impression of the magnitude of the losses, if any.
- **Weed infestation** – was there unusual weeds infestation reported? If yes, which types of weeds on which crops and where? What measures have taken; were they effective; why?
- **Over all crop production performance** – Was there any other factors other than mentioned above which can be the cause for significant reductions/improvements in crop yields this season? What is the overall impression of the team about the condition of crop production in the current season? Which areas are generally with deficit production and by how much? What type of crops and where are surplus productions expected this season? If possible get an estimate of the volume of the marketable surplus production. **Refer: WRSI LEAP production reduction to triangulate the woreda level production data.**

P. LIVESTOCK CONDITIONS

Water and pasture availability for livestock

- What and where are the current **sources** of water and pasture at this time of the year? *Identify livestock water traking need if any.*
- Does the community have **common grazing** land that is held in common? Who makes decisions about how common resources are used? How is the current status?
- How do you rate the current of **water for livestock and pasture availability** as compared to normal?
- Is **commercial animal feed** supply common in the area? If yes what type of animal feed supplied for sale, who are purchasing the feed and for which type of animal? What is the overall current situation of commercial animal feed supply to the areas as compared to the usual time? If there is a change why?

- What are the **livestock feed provision** opportunity in the area (improved forage, crop residues, natural grazing and industrial by product)
- What measure (**slaughter, commercial destocking, destocking, migration** and others) had been taken by community in the drought affected area ?

Livestock conditions and their productivity

- **Livestock diseases** - is there prevalence of livestock disease outbreaks? If yes, what type of disease, where, which animal and when was the outbreak? Was there any measure taken so far and if so how was its effectiveness? If the measures taken was not effective what was the reason? Which animal health services (e.g. extension, vets or para-vets) are in place to support rural livelihoods? What is the gap (*financial, human resource, vet. service material .. etc.*) as compared to the actual requirement of animal health services?
- **Physical condition –** How is the current livestock physical body condition as compared to normal? If it is poor why?
- **Livestock mortality** - is there evidences of unusual animal mortality? If yes what was the causes of mortality? Was there any measure taken and how was its effectiveness?
- **Herd size** - is there any change in current livestock herd size? If unusual reduction in herd size reported, explain why, where and which type of animal.
- **Herd movement** - Are there evidences of unusual herd movements into or out of the area? If there were unusual livestock movements, please explain why, which direction and what type of animals; Where are different livestock kept and graze currently (be specific – cattle, shoats, came)? What would be the impacts of movement in terms of health, access to adequate water, pasture and market, and the security issues?
- **Livestock productivity** - What are the overall impacts of the aforementioned livestock related events realized so far on the livestock meat and milk production as compared to normal? If the performance is poor to what extent it is? Which animal production is severely affected? What is its overall implication to food access/availability of the community? Which group of households are highly affected and why?

Q. MARKET CONDITIONS

- **Livestock prices -** current market prices for animals and livestock products; changes from same time of last year or from average prices
- **Livestock supply-** Type of livestock supply to the market , supply change of livestock to the market (increase or decrese)
- **Food grain supply** – the main types of staple food supplied to the market

- **Food grain prices** - prices of major staple food; higher/ lower than the norm; cause of price changes from same time of last year or from average prices
- **Wage rate** – changes in daily wage rates for unskilled manual labour; reasons for changes in wage rate; labour work opportunities in the areas; the labourer influx in the Woreda capital as compared to normal
- **Terms of trade (TOT)** – comparisons of food grains prices per unit with the prices of livestock per head (it is especially important for pastoralists area)
- **Any other** factors affecting market prices of both grain and livestock in the area; are there any factors that might restrict people's physical access to food, livestock or labour markets? do you expect prices to rise or fall in the coming months – to what extent?
- Suggested FGD question: Are the basic items available on the market at the amount and quality that you need (food and non food)?

R. OTHER SOURCES OF CASH INCOME

- Use the livelihood baselines to help you to identify the major cash income sources available in the zone/region at the current time and in the coming 6 months (apart from crops and livestock, which are covered above). Has access to these sources of income changed this year and why? Are incomes keeping pace with inflation?
- Are local labors and labor migration important sources of income in this zone/region? Which areas? How is work availability expected to compare to the reference/normal year in the coming 6 months? More or less and why? How does the daily labor rate compare to the reference year?
- Suggested FGD question: What are the top 3 biggest expenses that households in your woreda are spending on each month (perception question) ?
- Suggested FGD question: Are you able to meet your basic survival needs within your household without resorting to negative coping (see below if answered yes)?

S. COPING STRATEGIES (CURRENT FOOD STRESS REPONSES)

- What coping mechanisms are usually used in poor years (e.g. selling additional livestock, consuming wild foods, purchasing cheaper food, labour migration)? *Refer to the livelihood zone profiles.* OR
- What coping mechanisms are people using at the moment (e.g. selling livestock, reduction in meals, migration, borrowing money (debt) or land handover)
- To what extent can people use/increase use of these mechanisms now?

- If people normally do urban labour, is it possible to increase access to this source of income this year and is the rate paid for daily labour increasing or decreasing?
- Do people usually migrate outside the woreda in search of labour? At which times of year (July-Dec or Jan-June)? Where do they go and what are the production prospects in these areas?

T. DROUGHT & FLOOD RECOVERY

- Are there any flood & drought mitigation/ coping strategies implemented in the area? If yes, indicate the type of measures, where, when and by whom?
- Indicate what immediately or short term measures are most needed to help the community recover the impact of flood and /or drought.

- How many livestock drinking points are damage by flood and/or drought needs rehabilitation

U. HEALTH & NUTRITION SITUATION

Household health

- Have there been any major outbreaks of human diseases in the zone? Where? What proportion of HHs? Source of data?
- Have there been any increases in mortality rates? If yes, specify the name(s) of the disease(s), the affected locations and measures taken, if any.
- Is there any data on malnutrition available – e.g. current nutrition status data or attendance data from CTC/feeding programmes? If yes, what does this show? What is the source of the data?
- Any change compared to previous years in type and numbers of health services existing, their distance from villages, the number and qualification of staff at work, and the types and quantity of drug available?

Household Consumption pattern

- What is the main type of food for the households?
- How frequently did they eat last week of normal year? Most days, Some times, Few days, Not at all
- Which type of food items the household members have eaten last week?
- How frequently did they eat each of those foods last week? Most days, Some times, Few days, Not at all
- What is your estimate of the level of deficiency of dietary diversity (chronic, acute, distress)

- What are the main reasons for the changes in the current consumption pattern of each food items compared to normal time at household level?
- What the households are currently doing to cope the impact of change in consumption patterns?

V. WATER

- How does access to water and the quality of water available compare to the reference/normal year. Describe any changes in access/quality?
- If there is an abnormal problem of water, how far and how long people travelling in search of drinking water? Who in the family is collecting water or accompany livestock to water sources?
- Have measures been undertaken to address water problems? How effective are these measures?
- Are there any unexploited or alternative water sources in the area that are not normally used? If yes, why not?

W. EDUCATION

- Describe the existing number of schools of different levels and whether these have changed.
- How does the current year enrolment compare to reference/normal years?
- Describe the number of dropouts during the current year, if any, and the causes.

X. RELIEF DISTRIBUTION (PSNP and/or EMERGENCY/RECOVERY)

- What was the amount of relief food or cash non-food or non-cash received in the current year (if any)?
- How was the timing of the deliveries and regularity of the distributions?
- Are there any food and/or non-food stocks in the zone/region now? If any, indicate the amount and why is it still in the stock.
- What has been the impact of relief distribution on mitigating household deficits so far?

Y. FOOD SECURITY PROSPECTS UNTIL THE NEXT HARVEST AND RECOMMENDATIONS

Analyse the data collected and estimate the food/cash requirement, the number of people needing assistance by woreda, and duration of assistance to fill the food gap. Indicate possible types of interventions.

Provide a brief summary of the current situation, likely evolution and risk for food supplies, markets, livelihoods, household access and nutrition status. Interpret any deficits in terms of food security in the area, highlighting which woredas, livelihood zones and wealth groups are

particularly affected. Explain the overall prospect of food security and main causes of food insecurity between now and the next harvest.

Make recommendations in terms of response and targeting options. Outline possible food and non food responses to problems of food supply/availability/access and the advantages and disadvantages of each of the possible responses.

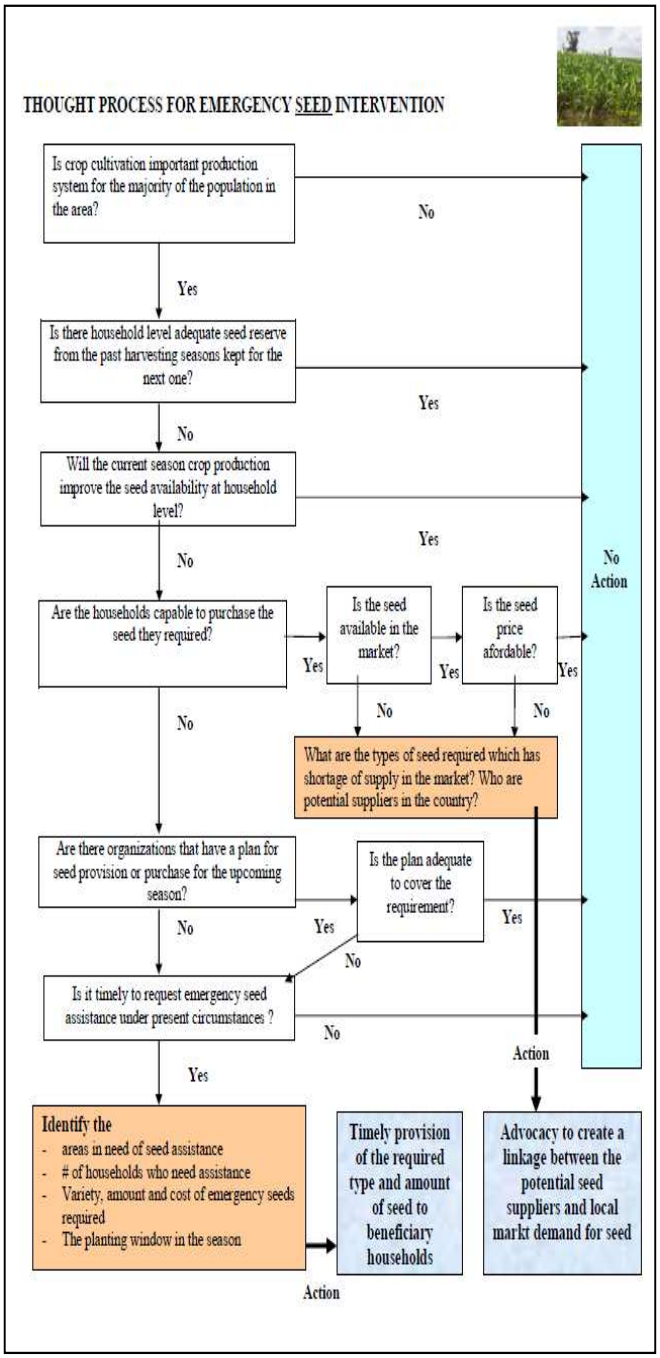
Z. ESTIMATES OF NEEDY POPULATION & DURATION OF ASSISTANCE BY WOREDA

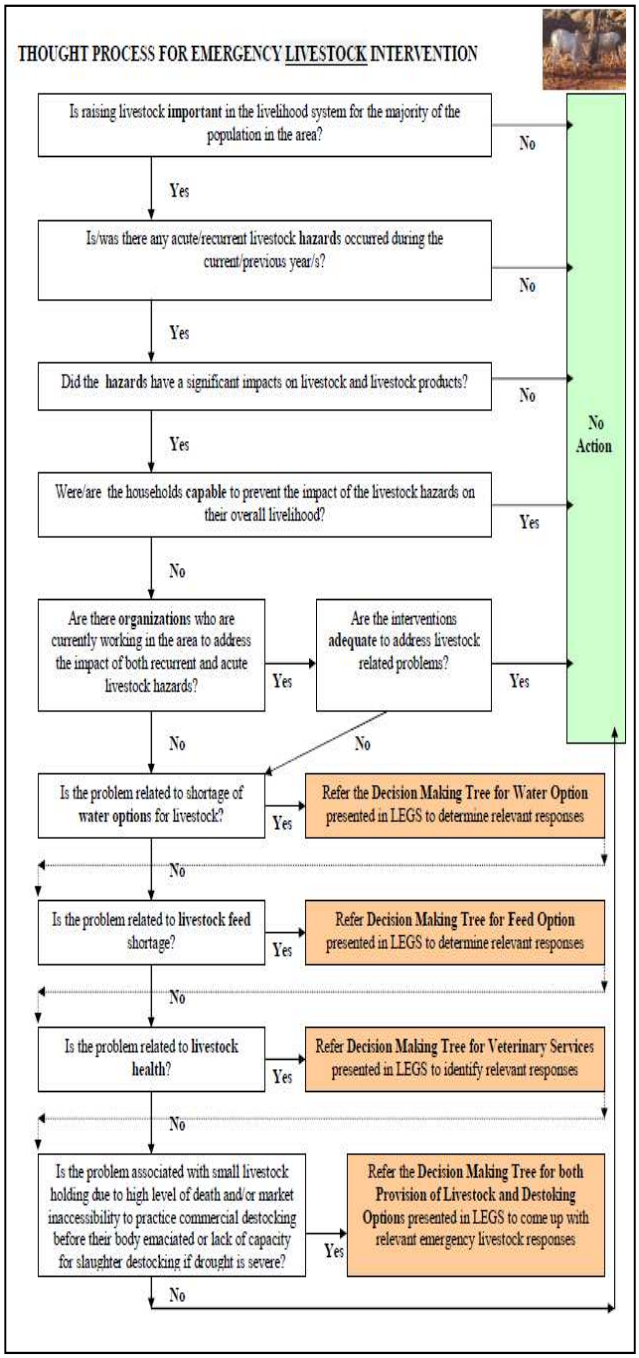
a. Food Requirement (January – June 2016)

Administrative Zone	Woreda	Woreda population	Total Emergency Food beneficiaries estimated in the Belg /pastoral Assessment (1)	Number of registered PSNP beneficiaries (2)	Total Belg/ Pastoral assessmet Ben.- PSNP	Duration assistance required in months	Starting Month

Agricultural Requirements (January – June 2016)

The agricultural need estimation include both seed and livestock related interventions. Seed is more relevant in the crop dependent areas where as livestock in the pastoral and agro pastoral areas. The tables are attached below to estimate the agricultural needs. To fill those data the analyst has to use the following thought processes.





Emergency /Recovery Seed Requirement for the period January – June 2016

Region _____ Zone _____ Appropriate season _____

Woreda	# of target HH			Seed type	Seed variety	Area to be planted (ha)	Amount (qt)	Unit Price (Birr)	Total Price (Bir)	Sowing window	Delivery time
	Male headed	Female Headed	Total								

Emergency/Recovery Livestock HEALTH Requirements for the Period January – June 2016

Region: _____ Zone: _____ Date: _____

Vaccinations

Woreda	Number of beneficiaries in HH			Livestock		Type and amount of Vaccines needed			
	Male headed	Female headed	Total	*Species*	*Number*	*Vaccine Type*	*Vaccine Amount* (Doss)	*Unit Price (Birr)*	*Total Price (birr)*

Total									

Emergency/Recovery Livestock HEALTH Requirements for the Period Junuary – June 2016

Region: _____ Zone: _____ Date: _____

Treatment

Woreda	**Number of beneficiaries in HH**			**Livestock**		**Type and amount of drug needed**				
	Male headed	Female headed	**Total**	***Species***	***Number***	***Drug Type***	***Unit***	***Drug Amount*** Unit	***Unit Price (Birr)***	***Total Price (birr)***

Total										

Emergency/Recovery Livestock HEALTH Requirements for the Period Junaury – June 2016

Region: _____ Zone: _____ Date: _____

Vet Equipment

Woreda	**Type and amount of Vet-equipment needed**				
	Vet Equipment Type	***Unit***	Amount	***Unit Price (Birr)***	***Total Price (birr)***

Total					

Emergency/Recovery <u>Livestock FEED Requirements</u> for the period Junuary – June 2016

Region: _____ Zone: _____ Date: _____

Wored a	Number of beneficiary HHs			Livestock		Feed			
	Male headed	Female headed	Total	*Species*	*Number*	*Concentrate (quintals)*	*Concentrate Unit Price (Birr)*	*Hay/straw (Bale)*	*Hay/straw (Bale) Unit Price (Birr)*

Total								

Emergency/Recovery <u>COMMERCIAL/SLAUGHTER De-stocking</u> for the period January – June 2016

Region: _____ Zone: _____, Date: _____

Woreda	Number of beneficiaries in HH			Commercial De-Stocking			Slaughter De-Stocking	
	Male headed	Female headed	Total	Species	Number	Main market place	Species	Number

Total								

Emergency/Recovery <u>Re-STOCKING</u> for the period January – June 2016

Region: _____ Zone: _____ Date: _____

Woreda	Number of beneficiaries in HH			Re-Stocking			
	Male headed	Female headed	Total	Species	Number	Unit Price (birr)	Total Price

Total							

Flood Early Recovery Requirements by Woreda

Checklist for Flood Early Recovery Requirements by Woreda

NO	*Region*	*Zone*	*Woreda*	*Kebeles*	*Flood Coping Measures type (*)*	*Unit*	*Quantity required*	*Unit cost*	*Total Cost*	*Remarks*

Note (*) Early Recovery measures could de-silting of river beds volume in m^3 (length x width x depth), dykes (embankment formation) in M^3, gabion works in pieces (2m*1m*1m) of gabion or m3 including length of the river to be covered, length of grass strips (area to be covered), trees or shrubs to be planted along river banks, etc.,

Hazard affected and displaced people

Zone	Woreda	# of Kebele/s	Hazrd	Human Deaths			Affected people									Displaced people								
							Household head			Family			Total			Household head			Family			Total		
				F	M	T	F	M	T	F	M	T	F	M	T	F	M	T	F	M	T	F	M	T

	Regional total																							

Farmland and livestock losses and damages due different hazards

No.	Zone	Woreda	# of affected kebeles	Hazard	Damage on crops			Death of domestic animals							
					Flooded land (Ha)	Crop damaged (Qu)	Fruit/Pernial Crop damaged (Qu)	Sheep	Cow	Chicken	Donkey	Calf	Oxen	Goat	Bee hives
					\										
Total															

Damages due to different hazards on social services and infrastructural

Zone No.	Woreda	# of affected kebeles	Hazard	School affected/damaged			Health facility affected/damaged			Water facilities affected and damaged			Road damaged (Km)		Irrigation structure damaged (km)	Others, if any
				# of schools damaged	# of schools destroyed	Other damages if any	# of Health facility damaged	# of Health facility destroyed	Other damages if any	# of water points destroyed	# of water points damaged	Other damages if any	Road damaged	Road destroyed		
Total																