

St. Paul's Hospital Millennium Medical College Department of Public Health



Ethiopia Field Epidemiology Training Program (EFETP)

Compiled Body of work in Field Epidemiology

By Temesgen Bekele

**Submitted to the Department of Public Health, SPHMMC in
partial fulfillment for the degree of Master of Public Health in
Field Epidemiology**

January 2018

Addis Ababa

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January 2018

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Examiner

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Acknowledgments

First of all I would like to thank my mentors Mr. Hailemichael Bizune and Mr. Samson Zegeye for their guidance, support and inputs in my work. Secondly, I would like to thank Dr. Yosef Worku, Dr. Tatek Bogale, Dr. Samrawit Solomon, Dr. Mamo Wubishet, Dr. Takele Mena, Mr. Tewodros Getinet and Mr. Abyot Bekele for their constructive comments and contribution during field base supervisions.

Third, I would like to thank Dr. Daddi Jimma; former a deputy director general of Ethiopian Public health Institute and all PHEM staff for their cooperation and contribution during my study period.

Fourth, I also would like to thank different regional health bureau, zonal health department, Woreda health offices, community members and other related sector for their coordination, collaboration and contribution during outbreak investigation. At the last but not the least I would like to thank Ethiopian Public Health Association for its financial and logistic support provided to me.

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List of abbreviation/Acrimony

AFP	Acute Flaccid Paralysis
AFI	Acute Febrile Illness
AFRO	African Region Organization
AWD	Acute Watery Diarrhea
BPR	Business Process Reengineering
CDC	Communicable Disease Control
CHWs	Community Health Workers
CSA	Central statistics agency
CFR	Case Fatality Rate
CSA	Central Statistical Agency
CTC	Cholera Treatment Center
DHO	Woreda Health Office
DHS	Demographic and Health Survey
E.C	Ethiopian Calendar
EFETP	Ethiopian Field Epidemiology Training Progra
EFY	Ethiopian Fiscal Year
FDEs	Food and Drink Establishments
ORP	Oral Rehydration Point
PHEM	Public Health Emergency Management
SPHMMC	Saint Paul's Hospital Millennium Medical Colle
WASH	Water, Hygiene and Sanitation
W H O	World Health Organization

Executive Summary

The Ethiopia Field Epidemiology and Training program (EFETP) is a two year in-service training program in field epidemiology adapted from the United States Centers for Disease Control and Prevention(CDC) Epidemic Intelligence Service (EIS) program. The program is designed to assist the Ministry of Health in building or strengthening health systems by recruiting promising health workers and building their competencies through on-the-job mentorship and training. The program has two main components: a classroom-teaching component(25%) and practical attachment or field placement component(75%). Completion of the above mentioned two components of the residency culminates in a final output of works, which is equivalent to a thesis for the graduate school of public health for partial fulfillment of a master degree in Field Epidemiology.

These outputs of work have chapters, which includes report of outbreak investigations, surveillance data analysis, evaluation of a surveillance system, description of a health profile, abstracts for scientific presentation, a narrative summary of disaster situation, an epidemiological research project and another additional output report. In an attempt to complete these outputs of work different methods were used.

In chapter one a cholera outbreak was investigated. These included a cholera outbreak in Oromia Region, East shoa Zone, Adama Woreda in August 2016.

In chapter two, a surveillance data analysis of bloody diarrhea in east Shoa Zone Oromia Region, Ethiopia from 2011 to 2015. In chapter three, Evaluation of a surveillance system in SNNPR region, April 2017, in chapter four, in chapter five an epidemiological research project, in chapter six, narrative summary of disaster situation in Silite zone, SNNPR region from 1 April to 2 May 2017 and another additional output report done. Reviewed journals were done.

In chapter seven abstracts of surveillance data analysis were presented. The abstract was a “surveillance data analysis on bloody diarrhea.

Chapter I–Outbreak Investigation

1.1. Cholera Outbreak with Emergency of Serotype O1 OR O139, Adama Woreda – Oromia Region, Ethiopia-2016

Authors: Temesgen B. Zegeye¹,

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Background: Cholera is a diarrheal disease caused by *Vibrio cholera*, either type O1 or O139 result in AWD, of them 10–20% develop severe, watery diarrhea with vomiting. If patients are not promptly and adequately treated, the case-fatality rate reaches to 30–50%. Cholera continues to be an important public health problem among poorer communities, particularly in Africa which accounts for more than 90% of the annual cholera cases. 2016, there was confirmed acute watery diarrhea outbreak (AWD) in both Moyale woreda of Borena zone of Oromia region and starting from ends of May, AWD outbreak were in Addis Ababa, Similarly in August 9/2016 1st cases of AWD were seen in Adamaworeda Bate gerimama kebele and expand to other 2 kebeles of Wenji Kurufitu and Wenji Geferisa.

Objective: To assess the magnitude and the possible associated risk factors to the cholera outbreak occurred in Adama Woreda, Oromia, Ethiopia, 2016.

Methods: An unmatched case control study design was conducted to assess the magnitude and the possible associated risk factors to the cholera outbreak occurred in Adama Woreda, Oromia, Ethiopia, 2016 with the total number of 42 cases and 84 controls (1 case: 2 controls). The study area was Adama Woreda, Oromia and the study period was from August 09/2016 to August 17/2016 G.C. The primary data was collected through structured questionnaire by the principal investigator. Descriptive and analytical analysis was done by using micro soft office excel and epi Info.

Results: A total of 42 persons were infected and no death was occurred due to *Vibrio cholera* serotype O1. Multivariate analysis showed that Contracting cholera infection was associated with likelihood contact with AWD cases [AOR= 6.50; 95% CI= 3.80-29.60, P=0.000], unhygienic latrine [AOR=1.7, 95% CI= 1.8-5.9) and lack of knowledge how to prevent AWD [AOR=1.795% CI= 2.05-10, P=] were the predominating risk factors for developing the disease.

The Woreda health office with other responsible bodies should Conclusion: The outbreak was confirmed based on laboratory diagnosis (RDT test positive). All Kebeles were affected and resulted in 42 cases and no death. The highest attack rate was observed among the age group of 15-45 Years (ASAR=0.52%). The highest cases were reported from Bate germama kebele 30(71.4%). The Woreda health office with other responsible bodies should continue with health education and social mobilization on eating habits, personal and community hygiene and sanitation continue with health education and social mobilization on eating habits, personal and community hygiene and sanitation.

Key Words: Acute Watery Diarrhea, Vibrio Cholera, Outbreak, Adama town, Ethiopia

Continue with health education and social mobilization on eating habits, personal and community hygiene and sanitation

Key Words: Acute Watery Diarrhea, Vibrio Cholera, Outbreak, Adama town, Ethiopia.

1. Introduction

1.1 Background

Cholera is a diarrheal disease caused by infection of the intestine with the bacterium *Vibrio cholerae*, either type O1 or O139, which can infect both children and adults (1). About 20% of those who are infected develop acute, watery diarrhea (AWD), 10–20% of these individuals develop severe, watery diarrhea with vomiting. If patients are not promptly and adequately treated, the loss of large amounts of fluid and salts (more than 10-20 liters/day in severe forms) can lead to severe dehydration and death within hours. The case-fatality rate (CFR) in untreated cases may reach 30–50% (2). Cholera is usually transmitted through faecally contaminated water or food and remains an ever-present risk in many countries (1). Reservoirs of *vibrio cholera* are humans, water, some molluscs, fish, and aquatic plants. Although, up to 100,000,000 bacteria can be found in 1ml of cholera liquid (feces and in vomit) of healthy carriers and patients, only 1000,000 dose causes illness. Cholera incubation period ranges from several hours to 5 days while symptoms usually last 2 up to 5 days but infected persons (symptomatic or not) can carry and transmit vibrios during 1 to 4 weeks(2)

It becomes a global threat to public health and a key indicator of lack of social development. In 2008 alone, a total of 190,130 cases were notified from 56 countries, including 5143 deaths. Many more cases were unaccounted for due to limitations in surveillance systems and fear of trade and travel sanctions. The true burden of the disease is estimated to be 3–5 million cases and 100 000–120 000 deaths annually as of 2010 (3).

Global burden is from Africa, accounts for more than 90% of the annual cholera cases notified to the WHO and result in huge economic loss with millions of US\$. In Ethiopia it was indicated that, there was acute watery diarrhea (AWD) epidemic in 1990 which persisted with recrudescence of cases till 1998. According to reports from FMOH from July 2008 to June 2009 in Ethiopia, there were a total of 9485 cases and 193 deaths (with case-fatality rate 2.0%) of acute watery diarrhea in six regions including Addis Ababa(4).

Starting from October, 2015, there was confirmed AWD in Moyale woreda of Borena zone and starting from ends of May, the outbreak distributes to different region of the country including Addis Ababa. Similarly in August 3/10/2008 E.C 1st cases of AWD were reported to Adam health office from Bate gerimama kebele, Kurufitu Health center. And expand to other kebeles of the woreda. The woreda health office report to Zonal health office immediately since the

outbreak was in Addis preparedness activity were done before the case happen ,like training were given to health professionals , emergency drugs were prepared and the team from Zonal health office were arrived and different intervention activities were done. The field epidemiology residents from SPHMMC for field attachment were investigating the outbreak.

The Objective of this investigation was to determine the cause for outbreak and take intervention measures to control the outbreak. A total of 42 AWD cases reported from three kebeles of Adamaworeda starting from 9th August to August 17th, 2016 G.C.

1.2. Literature review of cholera

In 2015, 42 countries from all continents reported 172 454 cases of cholera to WHO, of which 41% were reported from Africa and 37% from the Americas where a large outbreak that started in Haiti at the end of October 2010. Limitations in surveillance systems, inconsistencies in case definitions and lack of laboratory diagnostic capacities may also contribute to under- as well as over-reporting.(5,6) .In 1997, a total of 118 349 cholera cases and 5 853 deaths were reported to WHO by countries of the African Region (7). By the end of 2005, the number of cholera cases notified from the Region had increased to 125 018 (94.8% of the total 131 943 cholera cases reported globally). (7).

Cholera remains an important public health issue in Africa. In 2008, 94% of the 190,130 cholera cases reported world-wide occurred in Sub-Saharan Africa. In 2009, multiple areas in Kenya experienced cholera outbreaks with case fatality rates (CFRs) ranging from 0.4% to 19% in areas that have had more than 2 cases. This country-wide outbreak resulted in over 11,000 cases of acute watery diarrhea. The majority of the specific areas reporting increases in acute watery diarrhea had culture-confirmed cases of *Vibrio cholera* identified from stool specimens. This burden of suspect cholera cases in 2009 is more than the country has experienced in the past decade (.Of the 7099 cases with gender information, 49.8% of cases were female. Of the 6124 cases with age information, the median age of cases was 17 years (range: 0-90 years). The percentage of cases in each group was as follows: 0-2 years (11.9%), 3-5 years (11.1%), 6-10 years (12.9%), 20-39 years (29.8%), 40-60 years (13.3%), and over 60 years (3.2%). There were 122 deaths due to cholera reported on the national line list, and CFRs varied among districts and provinces from 0 to 14.3% according to the newly created national line list data(8).

Study conducted in Oromia Region during December 2010 showed that, outbreak occurred acrossworeda. The woreda health office report to Zonal health office immediately since the outbreak was in Addis preparedness activity were done before the case happen ,like training were given to health professionals , emergency drugs were prepared and the team from Zonal health office were arrived and different intervention activities were done. The field epidemiology residents from SPHMMC for field attachment were investigating the outbreak.

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Study conducted in Oromia Region during December 2010 showed that, outbreak occurred across the Ganale River, in Guji and Bale Zones to the lakes at the southern tip of East Shoa. East Shoa and Bale had similar numbers of cases, 233 and 223 each, whereas Guji had a significantly higher number of reported cases, i.e. 3848. These cases reflected CTC registration logs only and not community cases. The epidemic curve shows that the outbreak began rapidly on August 5, when 97 cases were reported in the Guji Zone. There were five peaks overall: August 8 (223 cases), August12 (236cases), August15 (210cases), August17 (219 cases) and August 22 (220

1.3 Significance of the study

Cholera epidemic threshold is occurred whenever a single strain of vibrio cholerae has been isolated. Whenever a cholera alert threshold is reached, a rapid field investigation should be carried out in order to: confirm occurrence of an outbreak, verify diagnosis by reviewing clinical signs and symptoms and collecting samples for laboratory confirmation, identify additional cases and ensure appropriate treatment, determine the magnitude and patterns of the outbreak, if confirmed, estimate the potential for further spread; and recommend effective control measures for stopping transmission(10). Suspected cholera case was reported from Adama Woreda, East Showa Zone during WHO week 29/2016. Even though, there was cholera outbreak in Ethiopia including Oromia Region for the last six months, no cholera case was reported from AdamaWoreda in previous weeks or years. AdamaWoredahas border sharing with other zones or woredas that reporting cholera cases. Therefore, following this principles, we decided to investigate suspected cholera case reported from Bate germama, Wenji Kurufitu and WenjiGeferisaKebeles, Adama Woreda of East Showa Zone starting from WHO week 29/2016 G.C. The aim of this study was to describe the magnitude of morbidity and mortality due to cholera, investigate factors that contributed to the occurrence of the epidemics and to institute appropriate intervention measures to contain the epidemics in the woreda.

2 .Objective

2.1 General Objective

To assess the magnitude and the possible associated risk factors of the cholera outbreak occurred in Adama Woreda, Oromia, Ethiopia, 2016.

2.2 Specific objectives

- To verify the existence of cholera outbreak in different kebeles of Adama woreda, Oromia.
- To describe the outbreak in terms of person, place and time in the selected kebeles.
- To identify risk factors associated with cholera outbreak.
- To facilitate appropriate control and prevention measures against cholera transmission.

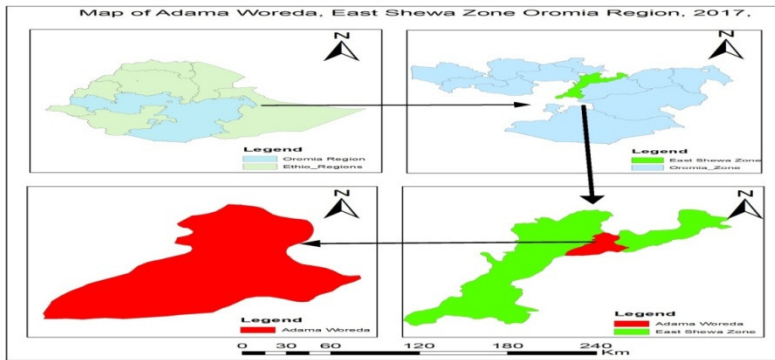
3. METHODS AND MATERIALS

3.1. Investigation area and period

3.1.1. Study area

We conducted cholera outbreak investigation in Weniji area, Adama Woreda, East Shewa Zone; Oromia Region, Ethiopia from August 9/2016 to 17/2016 G.C. Adama is one of the ten woreda found in East Shewa. It located 99 KM far from Addis Ababa to South east direction. Estimated total population during 2016 G.C of Adama Woreda is 183, 502. Proportion of female constitutes 90099 (49%), and male 93403 (51%). The Woreda consist a total of 44 kebeles of which seven is town and 37 are rural kebeles. There are four health centers, fourteen health posts and, one nongovernmental hospital Woreda's potential health service coverage was 100% by using available health facilities.

Adama Woreda is bordered by Arise zone in the south east, Boset Woreda in the east, Lume Woreda in the west, Bora Woreda in the south and Amhara Regional state in north direction.



Geographical position of

Adama Woreda is 9°33'N and 36° 38'E.

Figure 1: Map of East Shoa Oromia special zone, Ethiopia 2016 G.C.

3.1.2. Study period

We conducted the cholera outbreak investigation in Wenji area, Adama Woreda during August 9-17/2016 G.C.

3.2.3 Study population

In the unmatched case control study, those individuals who are residents of Adama woreda those who presented with AWD and those who were free from AWD during the investigation period were taken as a study subjects.

3.2.4 Target population

In the unmatched case control study, those individuals who are residents of Adama woreda those who presented with AWD and those who were free from AWD during the investigation period were taken as a study subjects.

3.2.5 Sampling population

In the unmatched case control study, those individuals those who presented with AWD in the cholera treating center(CTC) and those who were free from AWD during the investigation period at Wenjii area.

3.3.3 Sample size determination

The sample size was calculated by using double population proportion formula by considering assumption of a total of 126 respondents (42 cases and 84 controls) were determined to be participants of the study using Statcalc function of Epi-info version-7: using confidence interval of 95%, power of 80%, p-value<0.05 a one to two ratios of cases to controls, were used.

3.3.4 Sampling techniques

. All cases were chosen conveniently from the CTC whose are registered in the line list and control subjects were selected conveniently from the neighbor house. However, the selection of control participants was performed after excluding case-patients.

3.4 Case definition

3.4.1 Community case definition

Any person five years of age or more with profuse acute watery diarrhea and vomiting.

3.4.2 Standard case definition

3.4.2.1 Suspected case

In an area where the disease is not known to be present, a patient aged five years or more develops severe dehydration or dies from acute watery diarrhea;

If there is a cholera epidemic, a suspected case is any person age five years or more with acute watery diarrhea, with or without vomiting.

3.4.2.2 Confirmed case

- A suspected case in which *Vibrio cholera* O1 or O139 has been isolated in the stool.

3.5 Inclusion and exclusion criteria

3.5.1 Inclusion criteria

Case: A case was any resident of Adama woreda and reported in the line list as positive for *Vibrio cholerae* serotype O1 (or O139) or had symptoms of AWD or diagnosed as Cholera during the outbreak period (09/08/2016 to 17/08/2016) G.C.

Control: A control was any resident of Adama woreda, who had no signs and symptoms of cholera up on himself /herself and family members during the outbreak period and agreed to participate in the study.

3.5.2 Exclusion criteria

Case: Person who was positive for *Vibrio cholerae* serotype O1 (or O139) or had symptoms of AWD or diagnosed as cholera during the outbreak period but not well recovered from the disease and unable to provide the information.

Controls: Controls are defined as persons living in the same neighborhood but who had not suffered from cholera until the date of the interview and family members of case were excluded from the study.

3.6 Operational definition

Knowledge on mode of transmission: In this study knowledge of study subjects on mode of transmission of cholera measured as 'Good or high or have knowledge' and 'Poor or low or have no knowledge' when the participant answered two or three and nothing or one out of the three cholera transmissibility respectively. The potential transmissibility of cholera could be through eating contaminated food, contaminated water and contact with patient (1, 2).

Knowledge on mode of preventive measures: The study also measured the knowledge of respondent on preventive measures of cholera as good or high knowledge and poor or low or has no knowledge. If the respondent replied the core methods namely eating cooked food, using purified water and washing hand or four out of the five preventive methods of cholera outbreak (using toilet, eating cooked food, using purified water, hand washing and vaccine) considered as have good knowledge otherwise poor knowledge (1,2).

3.7 Study variables

Dependent variable

- Cholera infection

Independent variable

- Socio-demographic characteristics
- Contact history
- Travel history
- Hygienic practice
- Knowledge on cholera mode of transmission
- Knowledge on cholera preventive measures
- Water treatment chemical at house level.

- **Data collection procedure**

3.8.1 Data collection methods

Reviewing the line list and index cases' clinical profile during August 9th to August 17th, 2016 was conducted and manipulated for basic descriptive epidemiological parameters. To have a sampling frame of control participants, compiling and merging of population lists of Adama woreda was also performed. Discussion with health personnel working at health center on index cases, case definitions, reporting situations and laboratory diagnosis tools, size and living standard of the population was conducted. A structured investigator administered questionnaire was also conducted and subjects offered oral consent. The variables and their characteristics in the questionnaire were adopted after reviewing the national and WHO cholera guidelines. A household visit for each cases and controls and an active search of suspected cholera cases were conducted at Adama woreda, and the active cases found were taken to CTC for clinical evaluation. Additionally, stool samples of suspected cases for culture confirmation at national reference laboratory (Ethiopian Health and Nutrition Research Institute), Adama regional lab and RDT at the health center were done to confirm and complement epidemiologically linked cases. Environmental assessment focusing on drinking water sources, restaurants, vegetables, and presence of any aggravating factors at site populations were also assessed and checked.

3.8.2 Data collection instrument

A line list containing signs/symptoms, date of symptom onset, result of stool samples, demographic information (age, gender), residency (Kebele, Woreda, Zone, Region) and occupation of suspected patients was used during the outbreak period and structured questionnaire (Annex-I) was designed to address the possible exposures of cases and controls by collecting data on their demography, knowledge, history (past, contact, and travel), hygienic practice, feeding, and clinical pictures (specific to cases).

3.9 Data collectors

The data collectors were Field epidemiology resident's cohort II from St PHMMC and Health staffs from `Weniji Health center. They were briefed on how to collect the necessary data using the data collection format.

3.10 Ethical consideration

Permission was obtained to accomplish the investigation from Saint Paul's Hospital Millennium Medical College and Ethiopia Public Health Institute as they are the partners of the study. Formal permission was also asked and received from Oromia health bureau and from East showa health office and Adama woreda health office in order to conduct and gather the desired data from both cases and controls. To ensure the consent and voluntariness of participants, purpose of this study was explained to participants. Moreover, withdraw at any time and anonymity (privacy) to keep data confidentiality was assured. The study subjects were also being informed to jump any question during interviewing session and assured that their data would not be transferred to third body.

3.11 Data quality and processing

The collected data was checked for its completeness and errors and put into a form that allowed it to be manipulated accurately and efficiently. The data was also be processed and tabulated by frequency distribution table and presented using descriptive figures and tables. In order to facilitate data manipulation, coding of written responses into numeric codes and data was entered into Epi info 7, export and analyzed using Statistical Package for Social Sciences (SPSS 21). Editing or cleaning of data was ensured both during the collection phase by manually reviewing the questionnaires or forms on which responses was originally recorded or line list used to registered patient key data; and after the fieldwork completed by using Epi-info7 that find errors and inconsistencies in the data, or by reviewing tabulations produced by the computer. The cleaned and checked data was exported to SPSS 21 for variable transformations including creating new variables and counting responses to a number of questions.

3.12 Data analysis

Using Excel-spreadsheet, descriptive data analysis was performed to describe the outbreak over time by date of onset, person (sex, age groups) and affected Kebeles.Odds ratio with

3.12 Data analysis

Using Excel-spreadsheet, descriptive data analysis was performed to describe the outbreak over time by date of onset, person (sex, age groups) and affected Kebeles. Odds ratio with

95% confidence in both bi-variable and multiple analysis was calculated. The bivariate analysis was used for variable selection and variables which are significant at 20% were selected for the multivariable analysis. The later analysis was employed for establishing an

Association between the possible risk factors and acquiring cholera disease at 5% significant.

3.13 Finding dissemination

Written report of soft and hard copies were prepared and shared to public health department of SPHMMC, Adama Woreda health office, EFETP mentors.

4. Results

4.1 Descriptive results

4.1.1 Description of AWD cases by person

The first case of AWD was came from Bate gerimamakebele in Adamaworeda in August 9/08/2016 G.C. who has traveling history to Gerigede holy water, since the first index case of AWD, intensive interview was conducted with the person who got the AWD disease, health facility staffs, and secondary cases about the index cases. According to them, and he told also he is a farmer man who came from Etaya of Arisi Zone Oromia region to use (Gergedede culturally holy spring water) where there was no an outbreak of AWD case. Meanwhile the secondary cases that had contact history with index cases were a 30 years female and a 50 years male living at the area of holy water. A total of 42 AWD cases reported from threekebeles of Adamaworeda starting from 9th August to August 17th, 2016. 19 (45.24%) and 23 (54.76%) were women and men cases respectively. The proportion of male contracting AWD was 9.52 % greater than female throughout the epidemic period. Fig 2 below this.

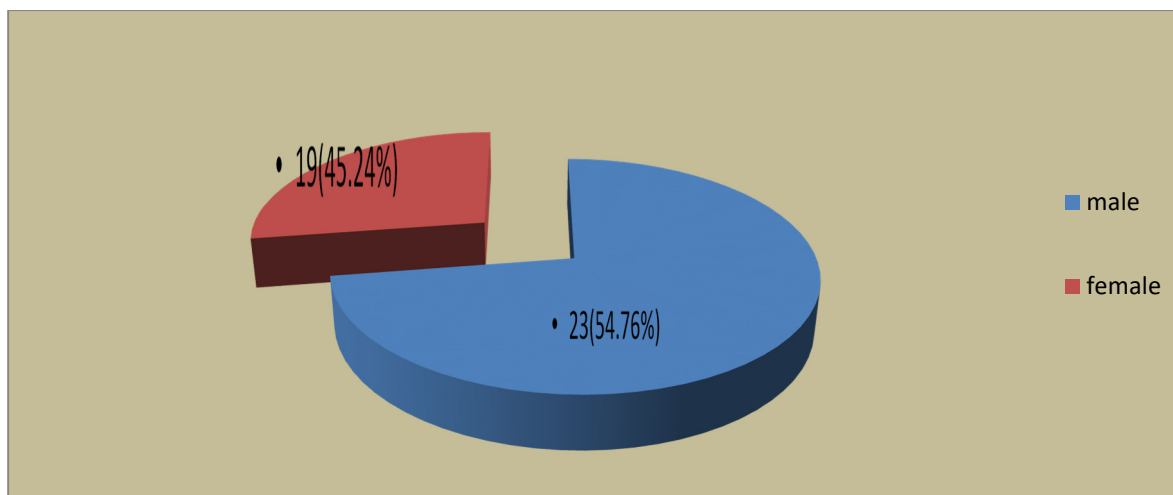


Figure 2: proportion of AWD cases by sex Adama woreda from 09/08/2016-17/08/2016 G.C

The total cases were classified into three age groups of whom 15-45 age group accounted 24(57.1%), 46-90 age group accounted 12(28.6%), 5-14 age group accounted 6(12.3%) . The proportion of cases in age group 15-45 and 5-15years old contained the highest and the least group that contracted AWD respectively.Figs 3 below indicate this.

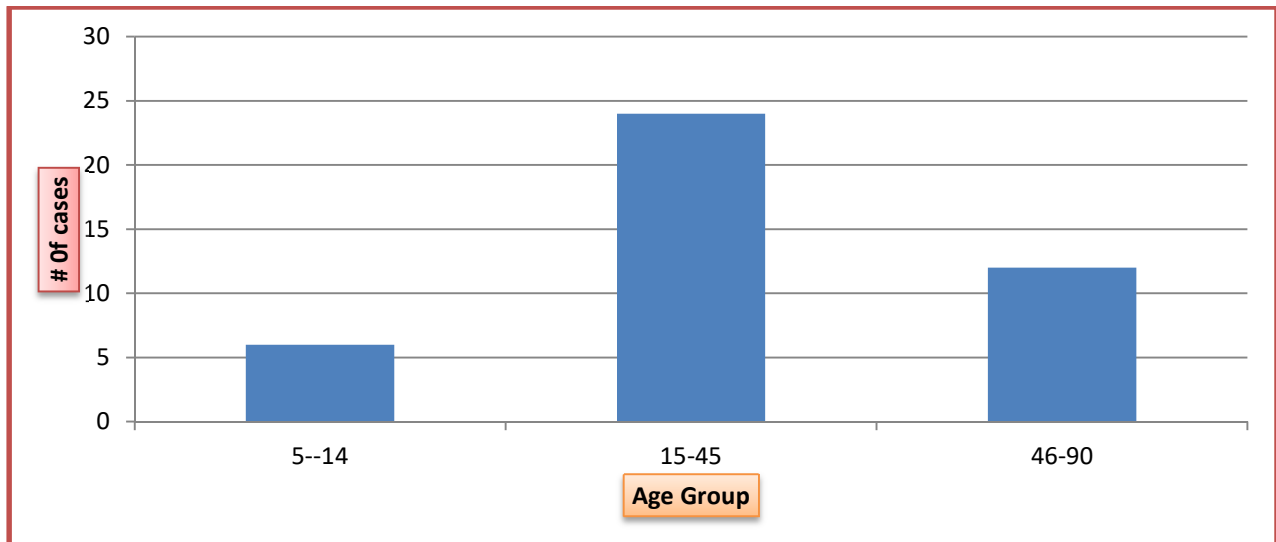


Figure 3 Proportion AWD cases AdamaWoreda by age from 09/08/2016-17/08/2016 G.C

4.1.2 Description of AWD cases by time

The duration of this outbreak was one weeks with highest peak on August 16th /2016G .C and August (13-14)th2016 G .C. The epidemic curve of the outbreak has a series of progressively smaller peaks and progressively rise up that indicated occurrence of single waves of infection due to common source cases. Since the first case was reported on August 9th from Bate gerimama Kebele where Garaged holy water exist, cases were reported daily with continue rising up till August 33rd when 16 cases (the highest) were reported. However, after teams deployed for investigations and interventions from Zonal Administration (ZA), Non-Governmental Organizations (NGOs) and field epidemiology residents, the trend of the outbreak was decreasing. No case was reported for 8 days. Fig. 4 below indicate this.

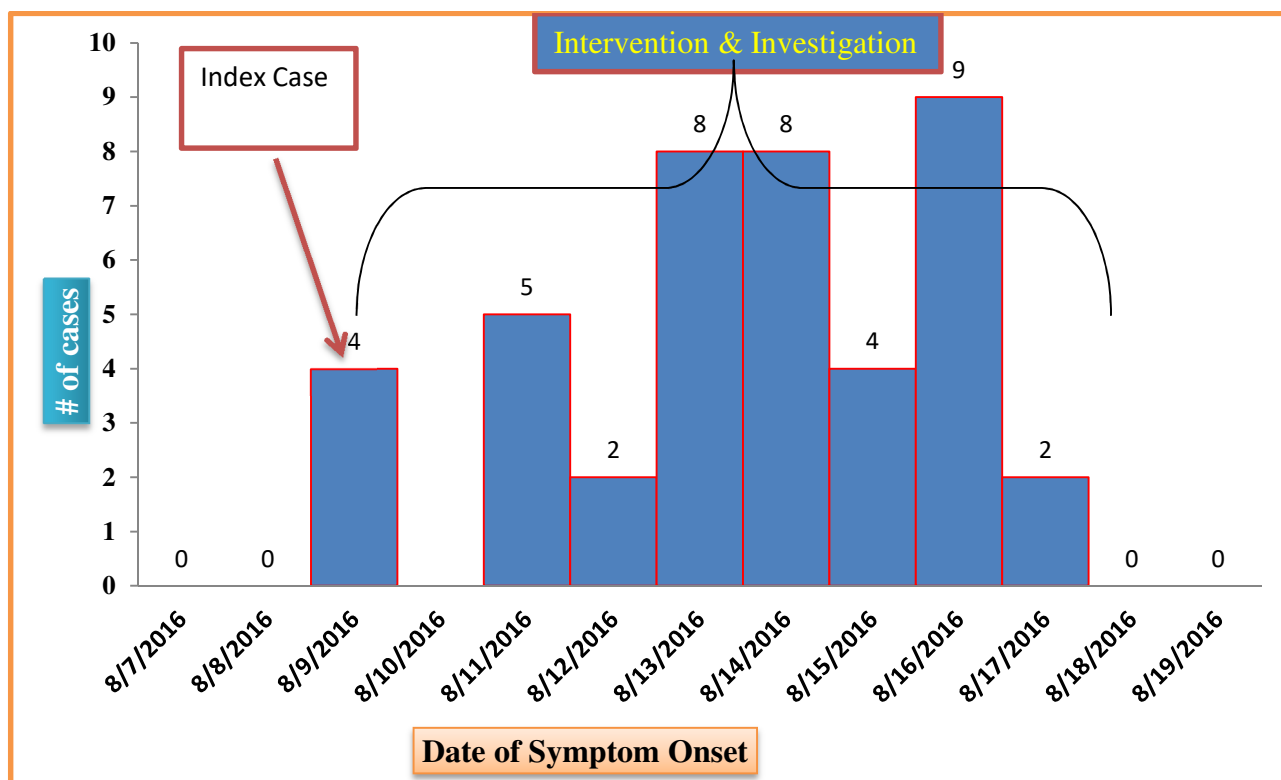


Figure .4: The date of onset of AWD outbreak in Adamaworeda, Oromia Region, Ethiopia from 9th August to August 17th, 2016 G.C

The incidence of cases was also analyzed in weekly basis by taking into account that week numbering is according to the Gregorian calendar. Hence, the week numbering started from January 1/2016 and the epidemic was started and reported during week 29 which is August 9th to 17th. All number of cases (42) was happened during the 33th week (August 9th to August 17th)...

The incidence of cases occurred within one week relative to at risk population (WIR) was 17 patients per 100,000 persons during Wk-33 which was the highest whereas the lowest WIR (11 cases from 100,000 at risk population) and was reported during the last week of the outbreak (Wk-31).

4.1.3 Description of AWD cases by places

Among the total 42 Kebeles of Adama woreda, 3 Kebeles were affected by the AWD outbreak but in 39 kebeles there was no AWD case. Of the total 42 cases, 30 (71.4%) cases were found in Bate Geri mama Keble, followed by 10 (23.8%) cases in Wenji Kurufitu Keble and 2 (4.7%) cases were from Wenji Geferisa Keble in which the least cases was reported. Fig. 5

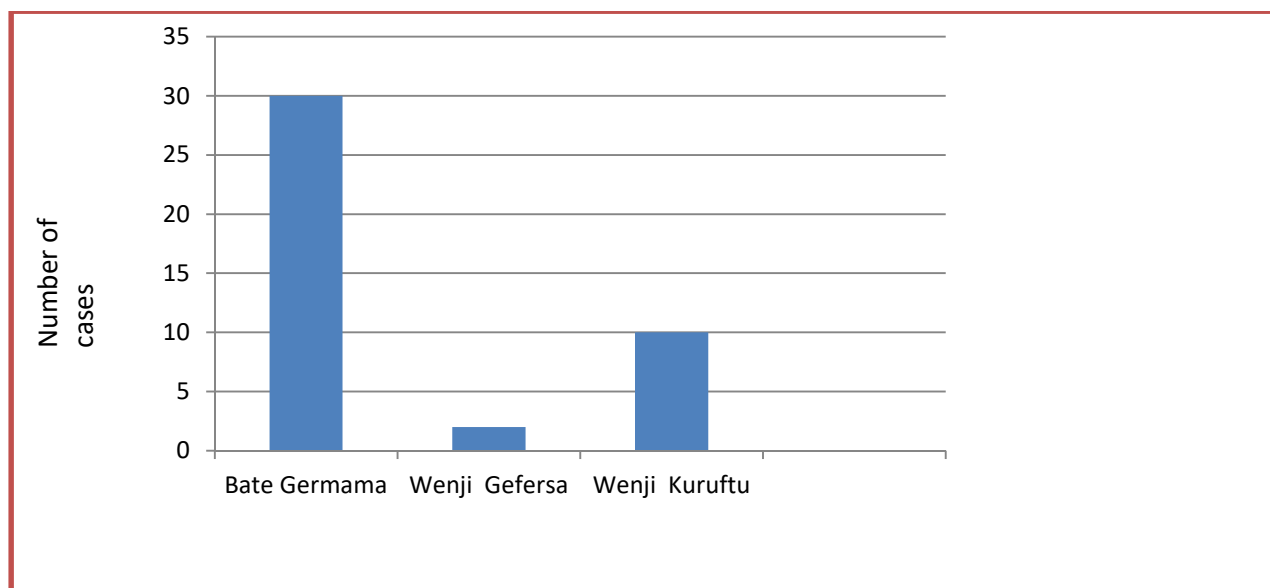


Figure 4: Distribution of AWD cases by Kebeles, Adama Woreda, Wanji Area, East Shoa Oromia, Ethiopia 2016 G.C

4.1.4 Distribution of AWD by their Occupation

Among the total 42 case of AWD 14(33.3%) were students, 9 (21.43%) were farmers, 8(19.1%), were house wife's, 6(4.3%) were daily lab ours, 3(7.4%) others and the 2(4.8%) were governmental employ. Fig 6.

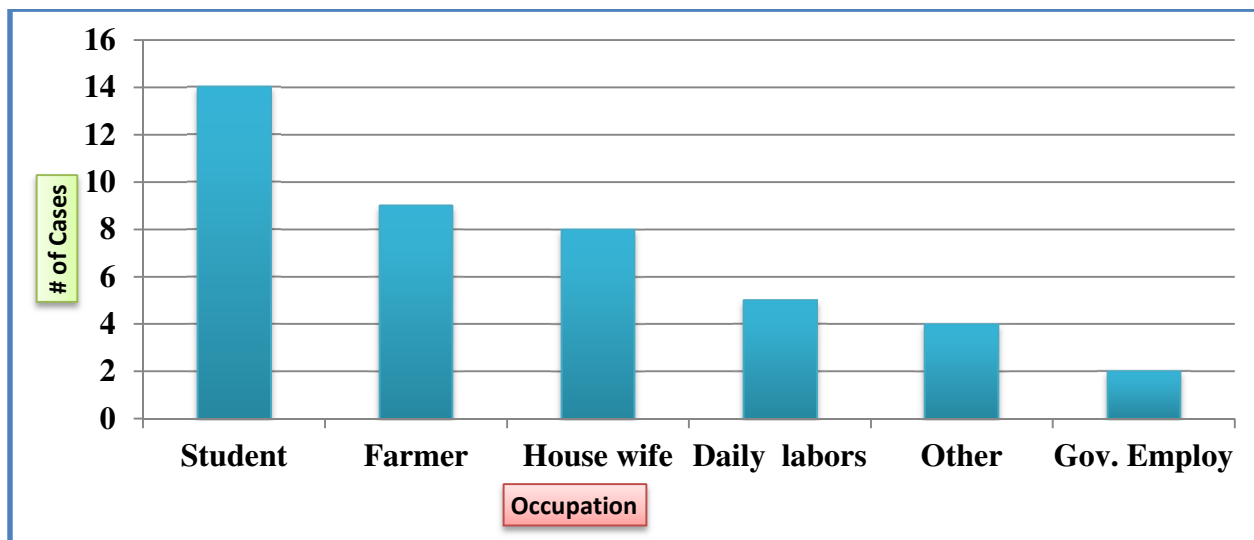


Figure 5: Distribution of AWD cases by Job category, in Adama woreda from August 9–August 17/2016G. C

4.1.5 Distribution of AWD cases by religion in Adama woreda August, 2016

Among the total 42 cases of AWD 30(71.43%) were Orthodox, 6(14.29%) Muslim and 6(14.29%) were protestant. This indicated that all religious uses this holy water but more predominant were orthodox religious followers were attacked more. Fig. 7

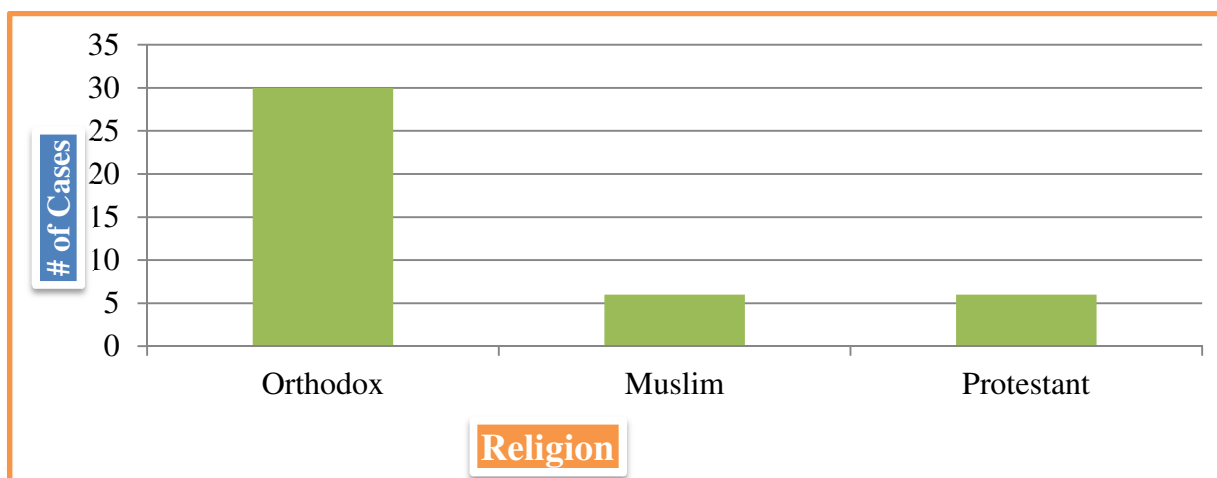


Figure 7: Distribution of AWD cases by Religion in Adama woreda from August 9-17, 2016 G.C.

4.1.6 Case fatality ratio and attack rate

Among the total 42 cases, No death was reported with CFR of (0%) Even though the overall attack rate of AdamaWoreda was 0.023% the attack rate on female population was (0.021%) which is less than the attack rate of male population (0.025%). The highest ASAR was occurred in age group of 15-44 years (ASAR=0.52%) followed by greater than 45 years old (0.31%) and age group of 5-14 years (0.17%). The ASAR was lowest in age group of 1-4 years 0 cases per 1000 persons.

4.2 Laboratory findings

Out of 42 suspected AWD cases, five stool specimen was taken and sent to Adama Oromia regional Laboratory center for culture confirmation ,other 15 Rapid Diagnostic Test (RDT) at local health facility or CTC . 13 samples of AWD cases were confirmed positive for Vibrio cholera bacteria while the rest cases were epidemiologically linked. Among the five samples for culture confirmation, all samples were positive for Vibrio cholera serotype O1 ogawaserotype of Vibrio cholera.

4.3 Index case search

The first early case had date of onset on 09/08/2016G.C from Bate Geri mama kebeleofAdamaworeda. Historically, he had travel history to AWD epidemic areas Gerged Spring water the so called cultural the (TSEBEL) prior to his symptom onset and also he does have exposure to the Awash River. Were the spring & river mixed after he was admitted to Kurifitu health center, his friends were affected by AWD since both patients used same source of water exposure. No patients were died before they visit the health facility.

4.4 Intervention Activities

4.4.1 Coordination and collaboration

The task force was organized, chaired by the Woreda administration and Health office as secretary organizes the task force. The other relevant government sectors are the members of the task force. The task force has daily discussion on regular meeting. The major challenges that need political decision and are unable to be solved at each thematic area were brought to the task force for decision.

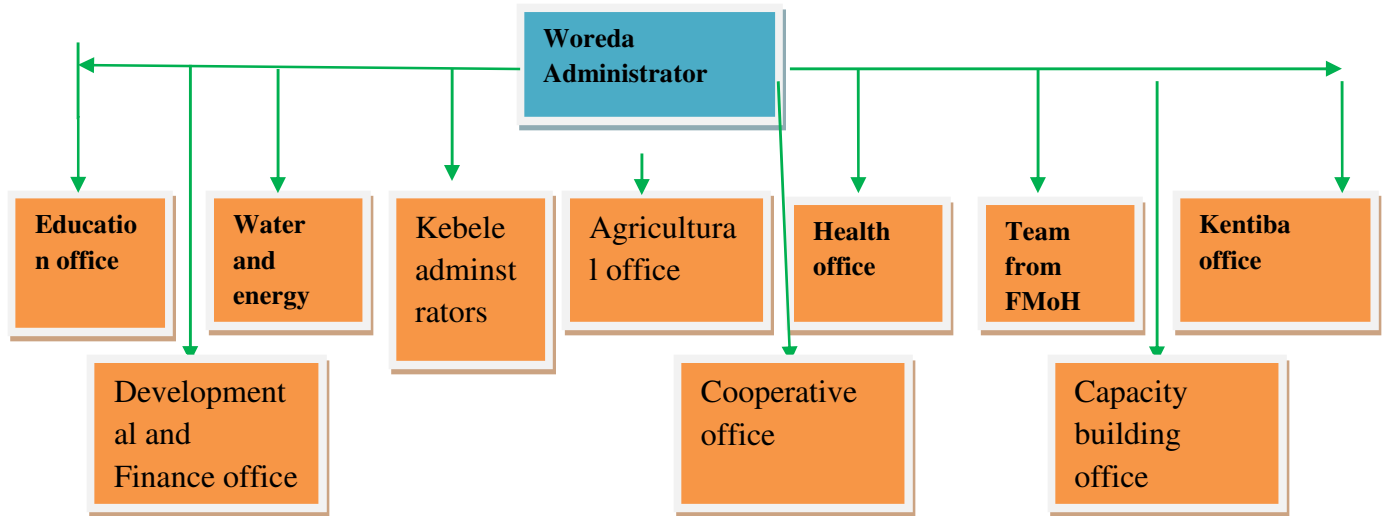


Figure 8. Woreda task force structure Adama woreda, 2016

Response plan the response plan was prepared in all thematic areas by woreda health office, Zonal Health office and EFETP Residents deployed by FMOH. And teaching while people are in water. Fig 9



Fig.9 woreda tax force photo, Adama Woreda,2016.



4.4.2 Logistic and resource mobilization.

One CTC Kits, and 10 cholera beds, disinfection chemicals and Jerry cane were supplied by Adamaworeda. 22 carton (of 1000 sachet) BishanGarri, 22 carton laundry soap and body soap, and 4 carton ORS (of 1000 sachet) were supplied by Regional health Bureau. 48 bag ringer lactate, 60 packet (of 10x10) Doxycycline, 1.5 carton ORS, 586 bag ringer lactate, and 158 litter Berekina were bought by the woreda budget. 100 packet (of 10x10) Doxycycline and 20 packet Erythromycin were supplied by the Regional health bureau.

4.5 Surveillance

4.5.1 Outbreak investigation-case control study with 126 study participants is undertaking and the possible risk factors for the occurrence of the outbreak will be assessed after the analysis. The controls were families selected proportionally from kebeles of high number of cases report to pick possible risk factors.

4.5.2 Data Analysis and interpretationthe data from line list and house to house visit was analyzed on daily basis and are provided to the task force meeting for decision making. Until 17/08/2016 G.C a total of 42 cases and no death were reported. The Epi-curve shows rise from 09 /08/2016G.C to 16/08/2016G.C and began to fall at 17/08/2016G.C.

4.6 Water, Hygiene and Sanitation (WASH)

Regarding WASH activities; latrine construction after the outbreak at one affected kebeles of AdamaWoreda has been undertaken. A total of 434 latrines were constructed and 158 were under construction. The latrine coverage of the three affected kebeles was increased from 27% to 38

4.7 Case management and Disinfection

The team had been providing orientation AWD case management protocol for health professional working on the Gergede health center. In addition to case management protocol the team had been providing orientation on surveillance, and CTC management for the staff. In collaboration with the health facility staffs, they had arranged the duty schedule for medical team, Sanitarians and disinfection team working in the CTC. The observed gap on case management and patient care are reported to the CTC leaders, Medical directors and task force meeting if necessary. The team visited each and every CTC before they join the task force meeting and brought the identified gaps and challenges to the task force for discussion and solution. They also tried to standardize the CTC by modifying the initially erected CTC. The

team has also established disinfection team on CTC and they make sure that household and equipment used by the patients are disinfected immediately after admission.

4.8. Social Mobilization and awareness creation

The team has undertaken awareness creation and health education about AWD in the community. They provided health education at school for a total of 1018(576 male and 442 females) students and for more than ten thousand populations at public gathering and house to house on risk factors, transmission and prevention of AWD.

4.9 Environmental assessment

Most of the affected people were those populations, who were come to the village for using Gerigede holy water for cultural healing purpose, in which open field defecation was the common defecation practices. There were shortage of water and hence they were forced to fetch water from Awash Rivers which were found to be none potable for drinking purpose. The people were also fetch water by jerry can, used roto as reservoir for a long time no cleaning as they told, the living condition of these peoples also overcrowded about 10 people in one class since it is sugar factory area.

Water sample was taken from different source of the area and send both to the Regional lab, the result from lab shows that the water is not potable for drinking.

4.10 Analytical results

A total of 42 cases and 84 controls were selected and asked to identify the possible risk factors associated with cholera outbreak occurred in three Kebeles of Adamaworeda, Oromia regional state. Out of the 42 suspected AWD cases, 42(100%) of them had a history of acute watery diarrhea, 21 (50%) of them had vomiting, 6(14.3%) of them had dehydration, 7(16.7%) had watery diarrhea, vomiting and general body weakness, 4(9.5%) had acute watery diarrhea, vomiting, general body weakness and muscle cramp, and 4(11.9%) had acute watery diarrhea, vomiting, general body weakness and muscle cramp, and 4(11.9%) had acute watery diarrhea, vomiting, general body weakness and loss of consciousness. These socio demographic characteristics of the study participants and associated possible factors for cholera outbreak.

Out of the 126 total respondents of the case control study, 42 (33.3%) and 84(66.7%) responders were cases and controls respectively. Among the three age groups, 15-45 age group accounted 22(52.4%) of the cases were contributed to 15- 45 years age group of case responders. The median age of participants involved in this case study was 43 years (ranges from 5 years to 90 Years). Oromo ethnic group was the largest one participated in the study by accounting 29 (69%) and 29 (45.9%) of the total case and control participants respectively. The result from occupation status of the responders found that Farmer accounted 9(21.43%) of the cases and 24(28.24%) of the controls Students accounted 14(33.3%) of the cases and 17(20%) of the controls and the rest were employees, House wife, daily labor and others. The married responders represented the majority of case with 20(50%) and Single 8 (20%), not applicable 7(17%) the cases. To select a variable or its characteristics by bivariable analysis at 20% significant, the overall p-value of those variables with more than two characteristics should also be significant at 5%. Therefore, age group and marital status, , occupation, educational level from socio-demographic variables were selected and enrolled in to multiple analysis after they were analyzed via bivariable analysis using p-value <20 %.

Table 1: Socio-demographic characteristics of Case-Control study of AWD outbreak Adama woreda, Oromia, Ethiopia, 2016

Variable	Response	Case	Control	Total
Educational level	Illiterate	9 (21.4%)	33 (38.5%)	42 (32.3%)
	Elementary	20 (47.6%)	32 (37.65%)	52 (40.94%)
	Secondary	11 (26.2%)	11 (12.94%)	22 (17.3%)
	College	2 (4.76%)	9 (10.6%)	11 (8.66%)
Ethnicity	Oromo	29 (69%)	39 (45.9%)	68 (53.5%)
	Amhara	8 (19%)	10 (11.76%)	18 (14.17%)
	Gurage	4 (9.5%)	14 (16.47%)	18 (14.17%)
	Others	1(2.4%)	22 (25.9%)	23 (18.1%)
Occupation	Farmer	9 (21.43%)	24 (28.24%)	33 (26.0%)
	House Wife	8 (19%)	12(14.12%)	20 (15.75%)
	Gov. Employ	2 (4.76%)	9 (10.6%)	11 (8.66%)
	Student	14 (33.3%)	17 (20.0%)	31 (24.4%)

	Others	9 (21.43%)	23 (27.0%)	32 (25.2%)
Marital Status	Married	20 (50%)	59 (71.08%)	79 (62.2%)
	Single	8 (20%)	16 (19.28%)	24 (18.9%)
	Divorced	5 (12.5%)	0 (0%)	5 (3.94%)
	Not Applicable	7 (17.5%)	8 (9.64%)	15 (11.8%)
Sex	Male	23 (54.76%)	63 (74.12%)	86 (67.72%)
	Female	19 (45.24%)	22 (25.88%)	41 (32.28%)
Religion	Orthodox	30 (71.43%)	50 (59.52%)	80 (63%)
	Muslim	6 (14.29%)	15 (17.86%)	21 (16.53%)
	Protestant	6 (14.29%)	19 (22.62%)	25 (19.7%)

Table 2: Results of two by two tables for some selected demographic and other variables case – control study, cholera outbreak investigation, AdamaWoreda, East Shoa, and Oromia, Ethiopia 2016 G.C

Exposure status of the respondents		Status of the respondents		Total
		Case	Control	
Age Group	5_14	7 (16.7%)	8 (9.4%)	15 (11.8%)
	15-44	22 (52.4%)	56 (66.7%)	78 (62.2%)
	45+	13 (31%)	20 (23.5%)	33 (26%)
Marital Status	Married	20 (47.6%)	58 (69%)	78 (62.7%)
	Single	9 (21.4%)	16 (19%)	25 (19.8%)
	Divorced	6 (14.3%)	1 (1.2%)	7 (5.6%)
	NA	7 (16.7%)	8 (9.5%)	15 (11.9%)
Occupation	Farmer	9 (21.4%)	24 (28.2%)	33 (26%)
	House Wife	8 (19%)	12 (14.1%)	20 (15.7%)
	Gov. Employ	2 (4.8%)	9 (10.6%)	11 (8.7%)
	Student	14 (33.3%)	17 (20%)	31 (24.4%)
	Others	9 (21.4%)	22 (26.2%)	31 (24.4%)
Educational Status	Illiterate	9 (21.4%)	32 (37.8%)	41 (31.4%)
	Elementary	20 (47.6%)	32 (37.8%)	52 (40.9%)
	Secondary	11 (26.2%)	11 (12.9%)	22 (17.3%)
	College	2 (4.8%)	9 (10.6%)	11 (8.7%)

Table 3: Results of two by two table for some selected demographic and other variables case – control study, cholera outbreak investigation, Adama Woreda, East Shoa, and Oromia, Ethiopia 2016 G.C

Exposure status of the respondents		Cases	Control	Total
Having knowledge on transmission of AWD Disease	Yes	12 (28.6%)	53 (62.4%)	65 (51.2%)
	No	30 (71.4%)	31 (37.6%)	61 (48.8%)
Knowing as AWD is transmitted disease	Yes	17 (40.5%)	54 (63.5%)	71 (55.9%)
	No	25 (59.5%)	30 (36.5%)	55 (44.1%)
Knowing as AWD is preventable disease	Yes	13 (31%)	57 (67.1%)	70 (55.1%)
	No	29 (69%)	27 (32.9%)	56 (44.9%)
Presence of sick person in the house	Yes	5 (11.9%)	50 (58.8%)	55 (43.3%)
	No	37 (88.1%)	34 (41.2%)	71 (56.7%)
Presence of sick person in the village	Yes	35 (83.3%)	67 (80%)	102 (81.1%)
	No	7 (16.7%)	17 (20%)	24 (18.9%)
Availability of hand washing facility near by toilet	Yes	13 (31%)	55 (67.7%)	68 (53.5%)
	No	29 (69%)	29 (35.3%)	58 (46.5%)
Open field defecation	Yes	11 (26.2%)	46 (54.1%)	57 (44.9%)
	No	31 (73.8%)	38 (45.9%)	69 (55.1%)
Source of drinking water from river	Yes	10 (23.8%)	28 (33.33%)	38 (29.9%)
	No	32 (56.19%)	56 (66.67%)	57 (44.9%)
Believing in as the water they use is save	Yes	29 (69%)	66 (77.6%)	95 (74.8%)
	No	13 (31%)	18 (22.4%)	31 (25.2%)
Practice of water purification	Yes	14 (33.3%)	50 (58.8%)	64 (50.4%)
	No	28 (66.7%)	34 (41.2%)	62 (49.6%)
Availability of water treatment chemicals	Yes	6 (14.3%)	50 (58.8%)	56 (44.1%)
	No	36 (85.7%)	34 (41.2%)	70 (55.9%)

Note: The references groups were those who responded as “Yes”

Table 4: Bivariaate analysis for independent factors related to cholera outbreak in Adama Woreda, East Shoa, and Oromia, Ethiopia 2016 G.C.

Variables		Status of the respondents		COR	95% CI	P-value
		Case	Control			
Having knowledge on transmission of AWD Disease	Yes	12 (28.6%)	53 (62.4%)	0.24	0.11-0.54	0.001
	No	30 (71.4%)	31 (37.6%)			
Knowing as AWD is preventable disease	Yes	13 (31%)	57 (67.1%)	4.5	2.05-10	0.000
	No	29 (69%)	27 (32.9%)			
Presence of sick person in the house	Yes	5 (11.9%)	50 (58.8)	10.57	3.8-29.6	0.000
	No	37 (88.1%)	34 (41.2%)			
Availability of hand washing facility near by toilet	Yes	13 (31%)	55 (67.7%)	4	1.85-9	0.000
	No	29 (69%)	29 (35.3%)			
Open field defecation	Yes	31 (73.8%)	46 (54.1%)	0.3	0.13-0.67	0.004
	No	11 (26.19%)	38 (45.9%)			
Source of drinking water from River	Yes	10 (23.81%)	28 (33%)	3.6	1.3-9.8	0.01
	No	32 (76.19%)	56 (66.67%)			
Practice of water purification	Yes	14 (33.3%)	50 (58.8%)	2.86	1.3-6.2	0.008
	No	28 (66.7%)	34 (41.2%)			
Availability on use of water treatment chemicals	Yes	6 (14.3%)	50 (58.8%)	0.12	0.05-0.28	0.000
	No	36 (85.7%)	34 (41.2%)			

Note: The references groups were those who responded as “Yes”

Table 5:Multi-variables versus Bivariaate analysis for independent risk factors related to cholera outbreak in AdamaWoreda, East Shoa, and Oromia, Ethiopia 2016 G.C.

Variables	COR	AOR	95% CI	P-value
Having knowledge on transmission of AWD Disease	0.24	0.34	0.11-0.54	0.001
Knowing as AWD is preventable disease	4.5	1.7	2.05-10	0.000
Presence of sick person in the house	10.57	6.5	3.8-29.6	0.000
Availability of hand washing facility near by toilet	4	1.7	1.8-5.9	0.000
Place of defecation	0.3	0.88	0.13-0.67	0.004
Practice of water purification	2.86	0.63	1.3-6.2	0.008
Availability of water treatment chemicals	0.12	0.11	0.05-0.28	0.000

Note: The references groups were those who responded as “Yes”

Result of environmental Assessment

Overcrowding -10 people/ one house especially in Bate germama kebele those who were daily labor .Lack of evidence on the latrine those who have and not have especially in this Keble. All the sprayed (30) latrine had not hand washing facilities. From the sprayed 30 latrine 5 of them were full and the feces were out, four (10) had no latrine .Most (25) of the latrine were traditional pit latrine. The house hold which were at the bank of the river and holy water were had latrine without hand washing systemand drained to the river.

6. Discussion

A short period of cholera outbreak was occurred in Adamaworeda of Oromia administrative region starting from August 9/, 2016 to August 17/ 2016. The total attack rate was 0.023 which is low compared to crud attack rate in Afar region district which was in 2009. Males attack rate was 0.025% which is low from Afar region which was compared with the attack rate of cholera outbreak recorded in Afar region in Ethiopia, 0.9 %, from April to May 2009 (15). In addition, a total number of cases 42 and 0 death recorded and which are low compared with the Afar region that was 1,076 cases and 48 deaths. The highest number of cases were observed among males with attack rate of 0.025% and this is different when compared to cholera occurred in Afar region districts which is the attack rate of males 87.85 and 52.1 % females were (15). Deaths from cholera occur mainly due to dehydration on arrival. Older peoples and street home people, especially those who have co- morbidity, were at highest risk of dying.

In this particular cholera epidemic, a total of 42 cholera cases were reported in Adamaworeda, Oromia region, Ethiopia starting from 9th August to August 17th, 2016 GC. According to various studies and reports, every year, cholera affects several hundred thousand people globally of which more than 90% occurred in Africa. Between 2002 and 2011, Africa reported over two-thirds of the 2.2 million worldwide cases in which east Africa region accounted 36% of the cases. In 2006 and 2009, 54070 and 11,769 cases were reported from Kenya and Ethiopia respectively (9, 10, 11, 12, 13, and 17). The CFR of this outbreak is Zero (0%) lower than the globe (0.2%), it is indeed below the CFR of the nation (1.1% in 2006), most African countries and the continent at large (1.5%) (9,11,14and17). A number of Male 23 (54.76%) and Female 19(45.24%) individuals whose age group is within 15 and 45 years (56 %) were largely affected by this particular cholera infection. Similarly, a study conducted in Tanzania in 2001 indicated that 53% males and 48% out of the total cholera cases were male and less than 25 years age individuals respectively (16).

Cholera outbreak investigation reports and studies in many Africa countries revealed that the typically serotype that causing cholera infection and epidemics is *Vibrio cholera* serotype O1 (17, 18). As the laboratory investigation of this study confirmed that out of fifteen samples,

thirteen samples were confirmed positive for *Vibrio cholera* and three were serotype O1ogawa and the rest were epidemiologically linked.

In this case-control study, unavailability of water treatment chemicals at household levels were more likely exposure to develop cholera infection ($p < 0.05$). This study is also clearly showed that respondents who had awareness about mode of transmission (contaminated food and water, contact with patient) and prevention of cholera were 0.17 and 0.65 times less likely to develop cholera than those who had no awareness about transmission and prevention of cholera respectively or knowledge about AWD mode of transmission and prevention is protective from developing AWD diseases. Similarly, a comparative study conducted in Peru also indicated that the percent of correct responses for knowledge of several specific preventive measures was low (19). Although, studies conducted on environmental determinants of cholera outbreaks in inland Africa countries found that direct person-to-person transmission of cholera does not seem to have played a prominent role in the spread of cholera in Africa (20), this particular study opposed by figuring of contracting cholera infection associated with likelihood of presence of sick person and potential contact history with same complaint patients. In other words, presence of AWD patients in responders' village and contact history with AWD cases were 6.5 and 3.8 times more likely to develop cholera respectively compared to counterparts.

This study also found that unavailability of hand washing facility near-by toilet, It is supported by other study conducted on environmental factors for cholera outbreak and discovered cholera repeatedly occurred in scarcity of pit latrines in areas with very poor living conditions, such as slums and camps, and regions where there is a cultural preference for open defecation (21). Regarding to water purification and other hygienic practices, the study found untreated water and related matters, washing hands and water containers with plain water are importantly the risk factors for the occurrence of cholera outbreak in study area. Similarly, studies conducted in Africa showed cholera transmission has been exacerbated by lack of efficient treatment of water, practice of drinking untreated water and unhygienic practices including the lack of soap use after defecation and before meals. The team also involved in social mobilization of health education to the community and targeted groups, places and institutions to enhance awareness on nature of the outbreak, transmission, prevention and treatment situations. We had taken water sample to Regional laboratory for investigation and, promoted environmental sanitation, personal hygienic practices and construction of latrine at household level.

Of the interventions that we did in coordination with zonal team and the health staff. CTC was starting its first case in 09/08/2016 G.C and admitted 42 cases up to 19/08/2016 E.C in Weniji health center.

7. Limitation

Sampling of cases was done by convenience method which may affect the representativeness of the study.

Food and vegetable samples were not laboratorial investigated that makes difficult to roll out the other sources of infection.

Possibility of recall bias cannot be ruled-out may affect action or intervention methods.

Controls were not tested for serological evidence of recent cholera infection. Because some cholera patients may remain asymptomatic for the duration of the infection that may affect the certainty of being cholera free and the result may be affected.

8. Conclusion and recommendations

8.1 Conclusion

The outbreak was confirmed based on laboratory diagnosis (RDT test positive). Three Kebeles were affected and resulted in 42 cases and no death. The highest attack rate was observed among the age group of 15-45 Years. (ASAR=0.52%). Peoples between 15 and 45 years were the most affected segment of the population. The highest cases were reported from Bate germama kebele 30(71.4%). Less awareness about the transmission of the disease and the peoples did not know how they prevent the disease. In each kebele no proper waste disposal system at all. According to this study finding, lack of treatment of water, lack of knowledge how to prevent AWD, using unprotected water were likely contributed for the occurrence of this cholera outbreak.

In this outbreak all treated cases, were recovered from their illness. This shows that the case management was good.

In conclusion, in this outbreak the overall case fatality rate (0 %) which was lower than the WHO's recommendation (0.2%). *Vibrio cholera* 01 serotype Ogawa was responsible for the acute watery diarrhea outbreak in the Adama woreda (Weniji area). Isolated organisms like *Escherichia coli* and other fecal coliform bacteria from drinking water sources could also support the cause for the situation in the area.

8.2. Recommendations

The woreda health office with other responsible should continue with health education and social mobilization on eating habits, personal and community hygiene and sanitation.

The Woreda healthoffice should strengthen their surveillance system to be able to detect outbreaks and notify others in a timely manner

The Woreda health office, zonal health office and NGOs should take intensive actions in promotion of latrine construction and ensuring of proper utilization at household level and its utilization.

The concerned bodies such as Woreda administration, Oromia region and NGOs should work in improving quality of life and increasing living standard of the internally displaced populations.

The woreda health office and the woreda water office should work on Distribution and promotion to use water treatment chemicals and supply adequate quantity and quality of water.

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Annex 1: Data collection tools for acute watery diarrhea out break

Annex I: Consent form

ID Number_____

Consent Form

Title: Suspected Acute Watery Diarrhea Outbreak Investigation- AdamaOromia Region, Ethiopia, August 2016G.C.

Introduction: Hello, my name is..TemesgenBekele I am a member of AWD outbreak Investigation team. Thank you for taking the time to speak with us today. We are investigating AWD outbreak occurred in AdamaWoredaOromia East Shoa zone. We are very interested in your experiences and your point of view.

Purpose: To identify etiologic agent and assess the risk factors of AWD outbreak in Adamaworeda Procedure: If you agree to take part, this interview will take about 30 minutes of your time. There are two parts. First, we will ask you about demographic information of you and your family, knowledge you have on acute watery diarrhea, your history of acute watery diarrhea, water, sanitation and hygiene information and your feeding practice.

Second, we will ask you for a stool and drinking water samples to test for acute watery diarrhea causative agents in your stool and drinking water. We need only small amount of samples. The samples will be tested at Kurufitu Health Center and Adama regional lab using a code so that no one will know about your results. All information collected during this study will be kept private and will only be known by the investigators.

Benefits: this project will help you and other people living in AdamaWoreda. We will use these results to prevent and control AWD outbreak in the Woreda.

Risks: there is no risk to you from answering the questions or allowing us to take water and stool samples.

Privacy: we will keep information about you private. We will not collect your name. Only the investigators will have access to the data and only for investigation purpose. We will not use any information that might identify you when we present or publish the study's results.

Payment: there is no cost to you for being part of the project. The approximate time that this study will take is 30 minutes. There will be no involvement past today.

Participant Agreement: The project has been explained for me and my house hold members. I have been given a chance to ask questions. I feel that all my questions have been answered.

Being in this study is my choice. I may change my mind and leave the study any time during the interview.

Participant Signature_____

Date_____

Name of persons obtaining consent_____

Signature of persons obtaining consent_____

Date_____

Thank For Your Cooperation!

Annex II:Checklist

N o .	Question	Coding Classification	Go To
Demography			
	Status	1 Case 2. Control	
	Responder	_____ _____	
	Address	Region_____ Zone_____ Woreda_____ Kebele_____Got_____ _____House No_____	
	GPS coordinate of the house	Latitude_____Longitud e_____	
	Ethnicity	1.Oromo 2.Somale 3.Tigre	

No.	Question	Coding Classification	Go To
		4.Gurage 6.Wolayita 8.Other(Specify)_____	
	Age	_____ Year (s) _____ Month(s)	
	Sex	1.Male 2.Female	
	Occupation	1.Farmer 2.Merchant 3.Student 4. House wife 5.Unemployed 6. Pastoralist 7. Gov't Employee 8.Private Employee 9. Daily Laborer 10. Not applicable 11.Other_____	
	What is your religious	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. other_____	
	What is your marital status?	1. Single 2. Married 3.Widowed 4.Divorced 5. NA	
	Level of Education	1.Illiterate 2.Read	

N o .	Question	Coding Classification	Go To
		and writing only 3.Elementary school(1-8) 4.Secondary School(9-12) 5.Tertiary School(college+)	
	How many family members residing with you?	_____	
Knowledge of AWD			
	Do you know acute watery diarrheal disease?	1.Yes 2.No	If No skip to 3.1
	How do you think acute watery diarrheas transmit from person to persons (none proving)?	1.Contaminated food 2.Contaminated water 3.Contact with patient 4.Other(specify) _____	
	What are you doing when you face acute watery diarrhea (none proving)?	1. Go to health facility 2.Seek traditional healer 3.Use ORS 4.Use holy water 5. stay at home 6 .Other(specify) _____	
	Do you think acute watery diarrhea treatment center is source of infection/possible risk factor for	1.Yes 2.No	

N o .	Question	Coding Classification	Go To
	AWD transmission?	3. I don't know	
	Do you think AWD is preventable disease?	1. Yes 3. I don't know 2.No	If 2 or 3 skip to Q2.7
	How do you prevent AWD (none proving)??	1.Using toilet 2.Eating cooked food 3.Using purified water 4.Hand washing 5.Vaccine 6.Other(specify) _____	
	How long does it take you to walk to the health facility from your house?	1. <10 m 2. 10-30 m 3. 30 m – 1 hr 4. >1 hr 5. >2 hr	
Past History of AWD			
	Have you ever been sick of AWD?	1.Yes 2.No	If No skip to Q 3.6
	How many times you were sick of AWD in the last one year?	1.Once 2.Twice 3.More than two times	
	Date and year of last sickness with AWD?	_____dd/mm/yyyy 99. I don't know	
	Where did you manage (none proving)??	1.At health facility 2.At home 3.At holy water site 4.Traditional healer 5.	

No.	Question	Coding Classification	Go To
		Others, _____	
	How long you were sick of the diseases?	_____	
	Was there sick family member of AWD in the past 5 years with the same complaints?	1. Yes 2.No 3. Not Applicable	If answer is 2 or 3 skip to Q 4.1
	Age of family members affected.	Male 1_____ 2_____ 3_____ 4_____ Female 1_____ 2_____ 3_____ 4_____	
	Was there death in your family due to AWD in the past 5 years?	1.Yes 2.No	
Clinical Pictures(Current infection)			
	Do you have history of acute watery diarrheal disease recently?	1.Yes 2.No	If No skip to Q 4.7
	When did the symptoms begin?	_____ dd/mm/yyyy _____ hour	
	Frequency of defecation per day	_____	
	Do you have the following	1.Watery diarrhea	

N o .	Question	Coding Classification	Go To
	Did you have contact history with the same compliant in the past 7days before your symptoms onset	1.Yes 2.No	
Travel and Exposure History			
	Did you travel in the past 7days outside of your village before your symptoms onset?	1.Yes 2.No	
	If, yes where	_____	
	Did you participate in funeral ceremony of AWD death	1.Yes 2.No	If no skip to Q No. 5.6
	When did you participate in funeral ceremony of AWD death	_____dd/mm/ yyy	
	Where did you participate in funeral ceremony of AWD death	_____ _____	
	Did you attend other public ceremonies /events(wedding, religious, bather , telethon)	1.Yes 2.No	If No skip to Q No. 6.1
	What kind of food did you served at the ceremonies/ event?	_____	
	What kind of drink did you served		

N o .	Question	Coding Classification	Go To
	at the ceremonies/ event? (if water mention sources)	_____ _____	
WASH			
	Where do you defecate?	1. Toilet 2. open field	If No Skip to Q 5.4
	If answer to Q6.1 is “toilet” who own it?	1. Private 2. Communal 3. Public	
	show me the toilet	1. Clean 2.Unclean 3.Ventilated 4.Sign of utilization	
	If the answer to question number 6.1 is OFD, can you tell me the reason?	1. No toilet 2. Culture 3.Bad odor 4. Fear of falling down 5.Too far from my house 6. Physically damaged (toilet) 7.Other(specify)_____	
	Is there facility to wash your hand after defecation near toilet?	1.Yes 2.No	
	When do you wash your hand (none proving)?	1.After toilet 2.Before food 3.After cleansing child 4.Before preparing food 5.Before feeding	

No.	Question	Coding Classification	Go To
		child 6.Other(specify) _____	
	What items are you using for hand washing?	1. Plain water 2. Soap 3. Ash 4.Other(specify)_____	
	What is the water source for your house hold for drinking purpose?	1.Pipe water 2.Spring 3.Hand dug well 4.Deep well 5.Pond 6.River 7. Lake 8. Bottled water 9.Other(specify) _____	
	What is the water source for your house hold for washing utensils?	1.Pipe water 3.Hand dug well 4.Deep well 7.Lake 8.Other(specify) _____	2.Spring 5.Pond 6.River
	What is the water source for your house hold for cooking food?	1.Pipe water 3.Hand dug well 4.Deep well 7.Lake 8.Other(specify) _____	2.Spring 5.Pond 6.River
	How many hours/minutes will take you or your family to fetch water	_____hours _____minute	

No.	Question	Coding Classification	Go To
	from the water source?	98. I cannot estimate	
	What type of container are you using to fetch water from the source?	1.Jerry cane 2.Bucket 3.Ensira(Gan) 4.Other(specify) _____	
	What type of water container are you/your family is using in your house for storage?	1.Jerry cane 2.Bucket 3.Ensira(Gan) 4.Rotto 5. Other(specify) _____	
	How was the water accessed from the storage container?	1.Pour 2.Dip with cup 3.Other(specify)_____	
	Does the container have cover/lid (observe)?	1.Yes 2.No	
	Do you clean your water containers regularly?	1.Yes 2.No	If No skip to Q6.19
	What materials do you use to wash your water containers?	1.Soap 2.Only water 3.Ash 4.Other(specify) _	
	How often do you wash your water containers?	1.Every day 2.Every other day 3.Once per week 4.Other(specify) _____	

N o .	Question	Coding Classification	Go To
	uncooked food did you eat?	vegetables 2. Raw tomato 5. Raw fish meat 3. Raw milk 6. Other(specify) _____	
	What kind of cooked food did you eat in the past 7 days of your symptoms onset?	1.Enjer with wot 2.Roasted meat 3.Other(specify) _____	
	Do you re-heat cooked food if not eaten immediately?	1.Yes 2.No	
	Where do you keep the cooked food?	1.Room temperature 2.Refrigerator 3.Other(specify) _____	
	What are you doing with the leftover foods (none proving)?	1.Reheat and eat 2.For domestic animals 3.Giving for beggars 4.Street children 5.Dump in waste substance 6.Other(specify) _____	
	Is there fish supply in your village?	1.Yes 2.No	
	Do you eat raw fish?	1.Yes 2.No	
	Did you eat food from other house in the past 7 days of your	1.Yes 2.No	

No.	Question	Coding Classification	Go To
	symptoms		

Chapter II - Surveillance Data Analysis

2.1 Description of dysentery diarrhea infection in Oromia region of East Shewa Zone Health office 2011 to 2015/16.

Executive Summary

Globally, diarrhea is the third largest cause of morbidity and the sixth largest cause of mortality among population of all ages. A ten-year review of the global problem of diarrheal disease has shown that there are 1 billion episodes and 3 million deaths occurring each year among under-five children. It is one of the leading causes of morbidity and mortality in developing countries, especially among children under the age of five.

In Africa, a child experiences five episodes of diarrhea per year, and 800,000 children die each year from diarrhea related dehydration. A more recent estimate indicated the two-week period prevalence of diarrhea in under-five children is about 30.6% and 17.7% Shigellosis, also known as bacillary dysentery, is an acute infectious enteritis of human and subhuman primates caused by bacteria of the genus *Shigellae*. It usually causes frequent passage of small-volume, bloody mucoid stools, accompanied by abdominal cramps and rectal pain. Life-threatening complications of shigellosis include hemolytic uremic syndrome encephalopathy's, colonic ulceration and perforation, shigellemia, toxic mega colonstenosis and obstruction, persistent diarrhea, severe malnutrition, and wasting. Disease can result from infection with any one of four known shigella species, but only *Sh. dysenteriae* type 1 (1 or Shiga's bacillus) is known to cause outbreaks of epidemic proportions. For reasons not entirely understood, Shiga's bacillus eventually goes from playing a minor role in the cause of shigellosis to suddenly and dramatically becoming the dominant factor in massive dysentery epidemics.

Dysentery epidemics exacerbate the already important burden of endemic shigellosis in developing countries. An estimated 140 million cases and 576,000 deaths occur annually due to shigella infection in children under five years of age worldwide. Because of problems in clinical and laboratory diagnosis, these numbers are probably grossly underestimated Diarrhea is the passage of loose faeces (liquid stool) three or more times a day, or more than is normal for the individual. If the diarrhea continues for less than 14 days, it is referred to as acute diarrhea; if it lasts for more than 14 days it is said to be chronic or persistent diarrhea. Diarrhea is also distinguished into acute watery)

Five years, 2011-2015/16 bloody diarrhea (Dysentery) in Oromia region East Shewa Zone , surveillance data were officially requested and received the data were analyzed by time and place using Epi.info.7.3.1 and Microsoft Office Excel 2007. Ethiopia underwent different strategies to have functioning and effective surveillance system down from the community level up to the regional and national level. Currently, PHEM is implemented in most of the regions to strengthen surveillance and early warning system for Public health emergencies and events.

However, the performance of core surveillance activities and qualities of the system is not yet assessed .so, the objective of the studies was to assess the performance of core activities and attributes of surveillance system of Bloody diarrhea in East Shewa Zone of Oromia Region of five years reports. one priority diseases bloody diarrhea (Dysentery) was used as proxy indicator for the evaluation of performance and attribute of the surveillance system secondary data were collected from annual and weakly reports of the districts of health office in the Zonal health department.

Public health surveillance is an ongoing systematic collection, analysis, interpretation and dissemination of data regarding healthy related events for use and in public health action to reduce morbidity and mortality and to improve health. Blood diarrhea are of the 20 priority disease as weekly .there were significant disease burdens to the public .disease like dysentery were of the ten top disease throughout the district for more than decade .

The overall purpose of surveillance of this disease was to monitor the trend against the stated tolerance limits , as early warning and response system and any deviation from the limits , as early warning & pick any deviation to take action that cause bloody diarrhea and manage promptly . for these purposes , these disease had case definition and integrated disease reporting formats defined by MOH and WHO; and reporting was institutionalized in to the health facility & health offices. The recommendations were as follows;

- The overall structural setup of the surveillance system by the current reforms and creation of responsible unit / focal person at each district and health facility level plus involvement of the community in structure was admirable and there was great improvement but there was dalliance in active involvement of all these parties , s o do that timely detection of any abnormality deviation and investigation will be possible.

Back Ground.

Introduction

Clinical and Biological back ground shows as diarrhea is defined as **increase** in stool frequency and volume: the stool is usually liquid , and 24 hours output exceeds 250 gm/days , because normal stool weight is about 100-200 gm/days [.1]

About 9 liters of fluid is presented to the gastro intestinal tract daily (7 liters from the secretion and 2 liters from the diet) of this only 100 -200 ml of fluid is excreted with feces and the result will be re absorbed .(1)

Digestive system disorder comprises a range of both acquired and congenital disorders and manifested by Vomiting , dysphasia , diarrhea , anorexia , constipation , abdominal pain , abdominal distention or mass , jaundices , GI hemorrhage , etc [.1]

Many of these symptoms are common to disorders of several parties of gastro intestinal disorders of organs outside gastro intestinal tract should be considered in DDX. Therefore DDS is again defined as passage of three or more loose or water, bloody stools per 24 hours , or increase in stool frequency or liquid [.2]

Therefore there are three clinical types of diarrhea:

1. Acute watery diarrhea
2. Dysentery (Bloody diarrhea)
3. Persistent diarrhea (this is a diarrheal episode that starts acutely and lasts fourteen days or longer).

Dysentery -A diarrheal episodes that begins acutely and lasts four less than fourteen days with passage of blood in the stool [.2]

An estimated 500 million children in developing world suffer from diarrheas three or four times a year. One out of every twenty children born in to the developing world died before reaching the

age of five from dehydration resulting from diarrhea. This disease caused about 30 % of infant death in developing countries and contributed a lot to the high prevalence of malnutrition [2]

Dehydration from diarrhea is one of the five leading causes of death in children under five years .The most common cause of bloody diarrhea during last subsequent years of 2011 to 2015/16 at Oromia region east shewa zone were as follows :

- Drinking contaminated water
- Not washing hands with soap after toilet use
- Not disposing of feces safely were pre disposing factors
- While using row vegetables on dish did not use cleanness.

The principal finding cause of the bloody diarrhea , the common cause is shigella and other were campylo bacter jejuni, intro invasive E.coli , entameoba histolytica etc , even though there was no stool culture done at the zonal healthy departments , and the report were from clinical finding and report of HMIS . As the trends showed as the occurrence of the disease was highest during 2006 E.C about 14728 people affected of this 70 % was female 30 % was male , followed by 2004 E.C years about 13521 people were infected of this 53.3 % were female and 46.7 % were male , the third many people infected were in 2005 E. C about 12622 people diseased with dysentery in which 53 % were male and 47 % were female respectively . As the figure below showed that during these five years surveillance female were more affected than male with unknown reason, that leads investigation for the future .

In this 2016G.C 9 month physical year about 9946 patients were reported of this 5173 were male and 4773 were females. Therefore as public important of these diseases, dehydration from diarrhea is a major cause of death infancy and childhood ; this is unfortunate since the condition was easily treated with oral rehydration therapy (ORT) . The combination of high cause specific mortality and the existence of effective treatment , made diarrhea and its treatment a priority concern for health services . Diarrhea with blood in the stool is indicative of cholera or other specific disease and needs to be treated somewhat differently than diarrhea without blood (3) DHS .

During diarrhea, ORT was a simple and effective remedy for dehydration. This has public importance too. Bloody diarrhea if not controlled leads to outbreak especially if the etiology is

vibro cholera its consequence has international importance, therefore dysentery disease why under surveillance system in Ethiopian. (3)

The objective of the current analysis was since diarrheal disease especially dysentery is continuous as a leading cause of morbidity worldwide, and is ranked fourth as a cause of death and second as a cause of years of productive life lost due to premature mortality and disability .

The dysentery is one of the 20 target disease under surveillance which is reported every week.[3]

2.Objective

2.1 General objective

- ❖ To evaluate the existing of dysentery surveillance in east Shoa zone Oromia region.

2.2 Specific objectives

- To review existing five years dysentery of surveillance in east Shoa zone.
- Ensures that decisions are based on solid information and evidence
- .

3. Methods and materials

3.1 Study Area

The study area was conducted in East showa zone of Oromia Region, which extends between 70 33'50"N - 9008'56"N and from 38024'10"E - 400 05' 34"E which indicate that this zone is located in tropical climatic zone, the zone has total population of 1, 508,796 which is located 99 Km from the capital city of Ethiopia Addis Ababa.

Though the climate is influenced by altitudinal variation. The relative location or regional position of East Shewa zone has physical contact with three regional states of Ethiopia namely; Amhara National regional states, Regional state of Nations, Nationalities & peoples of southern Ethiopia & Afar National regional state. The total area of East Shewa zone is approximately 10241 Km² and Adama town is served as the capital town of the zone. East Shoa zone share the longest and shortest boarder with Arsi Zone and Afar Nation Regional state respectively & located in the rift valley Area



Figure 6: East Shewa Zone, Oromia Region, Ethiopia, 2016

3.2 Study subject

The study subjects was secondary data of all **dysentery** case in data base for the last consecutive **five years** from 2011--2015 in East Showa zone Public Health Emergency Management(PHEM) departments

In the Woreda there are a total of 40 kebeles and 35 kebeles are rural and 5 are Urban. The Woreda has its own council and representative in the Federal Parliament. All governmental sector offices were found in the Town of Modjo.

3.3 Study Design

I used a descriptive cross sectional study design to asses a five years of bloody diarrhea cause in the zone.

3.4 Sampling Size and sampling technique

Five years secondary data from 2011 to2015/16 was used.

Zonal PHEM and HMIS were conveniently selected for the evaluation. PHEM focal persons at ZONAL offices were participans of the study. The CDC “updated guidelines for evaluating public health surveillance system” published in 2012 were as a framework for the evaluation to achieve the stated objectives of the study.

3.5 Data type and source

Secondary data of all dysentery case in data base for the last consecutive five years from 2011 to2015/16.

3.5.1 Case definition

Diarrhea is defined as passage of three or more loose or water or bloody stool, per 24 hours. There are three clinical of diarrhea.

- 1. Acute watery**
- 2. Dysentery (diarrhea blood in the stool)**
- 3. Persistent diarrhea **

Blood diarrhea is a type of diarrhea which consist bloody in the stool, & the commonest cause of dysentery is shigella & others are campylobacter jejuni & entero invasive e-coli, entamoeba histolytica etc.

This Shigella cause diarrhea by mucosal invasion like entamoeba histolytica..

3.5.2 Data source

Dysentery case of surveillance data was collected from east Showa zone Health department surveillance data base.

Inclusion Criteria

All secondary data reported to PHEM and HMIS 2002-2011 G.C

Exclusion Criteria

Those data reported before and after 2005 G.C and 2011 G.C respectively.

3.5.3 Data Analysis

Data was processed and analyzed by Microsoft Office Excel 2007 and with other relevant software (SPSS to show it by graphs, tables and lines) .

Results: A total of 55,144 bloody diarrhea case were reported from 2011-2015 of five years surveillance data report case, of that about 24,922 (44.8%) were male and 30,437 (55.2%) were female .The proportion of male to female reported case were 45% and that of female to male were 60%. The prevalence of bloody diarrhea was 4% during this reported period. Furthermore, in this 2016 physical years of nine month report showed that, about 9,946 case were reported ,of this 4,773 [] were female and 5,173 [] were male . The National prevalence was found to be 1.3 per 100,000 populations per five years, 0.2 in Oromia regions . Zero admission and death case was reported from surveillance data report. The total male to female ratio was 0.7, the total female to male ratio was 1.3. The prevalence was high in June followed by March (5,384 and 5,121 per 55,144 respectively).

Table 3: Sex & Age distribution of bloody diarrhea in 2011.

Sex	Age in years			Total
	< 4 years	5-15 years	>15 years	
Male	50	110	176	336
Female	50	120	130	200
Total	100	130	306	536

**Table 4:
Sex &****Age distribution of bloody diarrhea in 2012.**

Sex	Age in years			Total
	< 4 years	5-15 years	>15 years	
Male	1572	1292	3452	6316
Female	1347	2694	3165	7206
Total	2919	3986	6617	13,522

Table 5: Below: Sex & Age distribution of bloody diarrhea in 2013

Sex	Age in years			Total
	< 4 years	5-15 years	>15 years	
Male	1715	1385	3563	6663
Female	1419	1497	3043	5959
Total	3134	2882	6606	12,622

Table 6: Below : Sex & age distribution of bloody diarrhea in 2014

Sex	Age in years			Total
	< 4 years	5-15 y ears	>15 years	
Male	1251	1280	2864	5395
Female	1014	3922	2397	7333
Total	2265	6202	8261	16,728

Table 7 Below: Sex & age distribution of bloody diarrhea in 2015

Sex	Age in years			Total
	< 4 years	5-15 years	>15 years	
Male	1514	1290	3833	6637
Female	1213	1328	3664	6205
Total	2727	2618	7497	12,842

NB : Sex & age distribution of bloody diarrhea in 2016 of nine months report indicated that there were total of 9,946 case and male was 5173 (52%) and female 4773 (48 %) .

Table 8: Sex & age distribution of bloody diarrhea in 2016

Age /years /	Male	Female	Total
≤ 4	12,984	13081	26065
5-15	13,208	15871	29079
15 +	26,192	28952	55144

Table 9Below, summery number of bloody diarrhea (Dysentery) case distribution by age and sex in East Shoa zone , 2011 to 2016 G.C

Months	Years				
	2011	2012	2013	2014	2015
January	148	341	878	926	746
February	259	1251	766	259	726
March	170	918	1142	1228	715
April	252	1209	1350	896	932
April	252	1209	1350	896	932
May	469	299	1486	844	1221
June	234	1112	1144	799	3095
July	8	1136	851	385	1097
August	5	967	982	805	916
September	15	1050	1235	1311	868

October	94	1072	695	853	777
November	259	934	1043	1002	894

December	148	915	778	1022	744
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Percentage

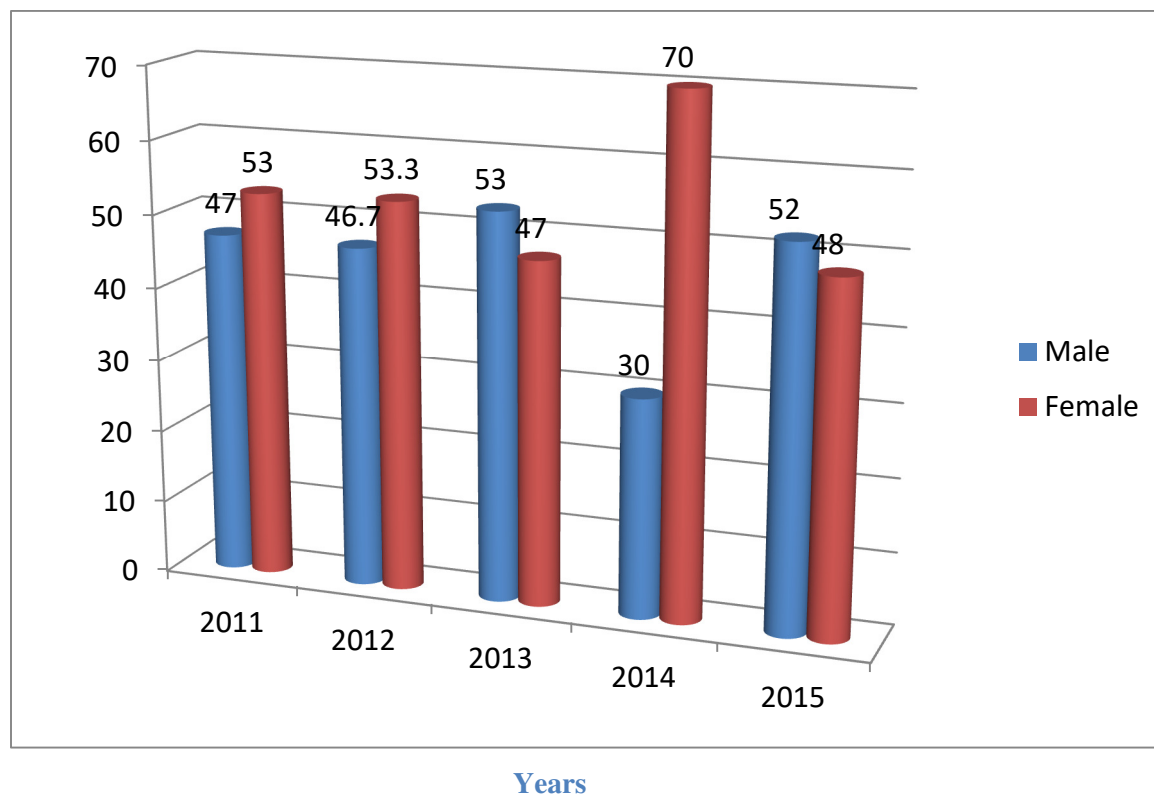


Figure 7: Bloody diarrhea (Dysentery) case distribution by sex in East Shoa zone, 2011 to 2016 G.C

Table 10 The Distribution of cases in Place (Woreda) of 5 years surveillance data Analysis

Woreda	Years				
	2011	2012	2013	2014	2015
Ada'a	94	1327	770	544	617
Adama	20	2467	1239	1944	1474
Adami Tulu	82	495	457	921	1314
Bora	22	266	439	488	431

Bosat	37	21	1941	2218	997
Dugda	15	702	1130	2131	682
Fen tale	109	555	1103	1405	1289
Gimbichu	15	555	605	910	771
Liban	34	301	409	608	718
Lume	53	1341	774	875	1043
Mata Hara	20	2456	1145	2778	1505
Modjo Town	15	767	597	796	1040
Zuwey Town	20	2268	908	1110	961

This above table shows a total case reported at each woreda in this surveillance period.

Conclusion and Recommendation; water contamination were suspected as a source of infection, therefore, measure to prevent bloody diarrhea were through regular supervision and inspection of food handlers and preparation in hotels and restaurants, monitoring storage of foods, regular medical checkup of food handlers. Basic health education on food hygiene and waste disposal safely, recommended, improving food hygiene and hygiene. Additional improvement water storage, correct water storage in the latrine facility and promotion of hand washing could reduce potential feature of contamination. Increase awareness to the public on the burden of intestinal parasite in the community and warranties further investigation

-Recommend: on latrine facility that should be made operationally with functional water supply and hand washing after defecation should be promoted.

- Give education on etiologic agent, means of transmission and treatment after exposure.

NB : - the proper disposal of feces and wastes is extremely important in preventing the spread of diseases (shigella)

- the use of latrine , minimize the occurrence of bloody diarrhea .

-There were marked differences in the prevalence of diarrhea between woredas in the Zone and there were seasonal variation in the prevalence of bloody diarrhea in the months and years.

Challenges and limitation

- There is no national PHEM Guideline and there were clear constraints in data collection and data quality to reach to strong conclusions and recommendations
- The reported dysentery diarrhea case are not classified as suspected, probable and confirmed per the WHO recommended case definition.
- There was no laboratory confirmed case report.

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Chapter III–Evaluation of Surveillance At Sankura Silitie Zone Woreda System

Executive summary

Introduction:

A well-functioning disease surveillance system is critical to measures the burden of a disease, identification of populations at high risk and the identification of any outbreak, clustering or change in trends of diseases of health concerns to the health system. Ethiopia had introduced the Integrated Disease Surveillance and Response (IDSR) in 1996 and updated it to Public Health Emergency Management (PHEM) on 2009. Malaria is one of a disease among the public health priorities of the country and it is one of a weekly reportable disease. Thus evaluating of the overall performance of the existing surveillance system of these diseases plays a vital role in identifying the gaps and to take corrective measures accordingly. Therefore, the aim of this study was to evaluate the performance, the core functions, supportive activities and system attributes of the existing surveillance system of Sankura Woreda Silite Zone administration.

Method

Descriptive cross sectional study design was conducted in woreda health office, health facilities, and in Sankura woreda Silite Zone administrative from March 20 to April 30 2017 G.C. From one governmental district hospital, two health centers and 6-health post conveniently selected for the evaluation. Number of Study subjects were being selected on a convenience basis taking into consideration time and transport constraints and diseases under surveillance was selected based on the public health importance of the study area. A total of 10 study subjects and one weekly reportable diseases (malaria) disease was being selected. The center for diseases control and prevention (CDC) “updated guidelines for evaluating public health surveillance system” published in 2001 used as a framework for the evaluation to achieve the stated objectives of the study

Results:

The overall completeness of the visited woreda health office was 48 (84 %), all of the visited sites have one trained manpower for surveillance. Woreda health office conducted quarterly basis supportive supervision to health facilities however; at health facility level, the supervision was not conducted separately as surveillance activity because of absence of the system in the previous time. From interviewed 11 focal persons for surveillance all were satisfied with their job.

Laboratory personnel have limited participation on surveillance activities; lack of reagents was a problem for case confirmation especially for malaria species at health center, and health post level due to budget constraint to buy. Representativeness of the surveillance system was affected by the limited participation of private health facilities (with only certain private health facility had reported) there is up and down of reporting system.

Conclusions: Specific surveillance system evaluation and feed back is not practiced at regular basis. Laboratory participation in surveillance is very limited and the Regional Health Laboratory does not practice regular quality assurance system in health facilities at grass root level there is turnover of staff on surveillance system. Representativeness found is low. Regular supervision and training of workers, awareness creation to private health sectors should put in place for strengthening of the surveillance system.

Key words: surveillance system evaluation , Woreda health office , Malaria, South nation nationality.

Evaluation of Surveillance at Sankuru Silte

Zone Woreda System

1 .Introduction

1.1 Back ground

Public health surveillance is an ongoing systematic collection, analysis, interpretation and dissemination of data regarding a health related event for use in public health action to reduce morbidity and mortality, and to improve health (1).

A well-functioning disease surveillance system is critical to measure the burden of a disease , identification of populations at high risk and identification of any outbreak ,clustering and change of trends of diseases of health concerns to the health system, in providing evidence-based information for planning, implementation, monitoring trends in the burden of a disease and evaluation of public health intervention programs to prevent and control disease, injury, or adverse exposure, evaluate program performance, prioritize the allocation of health resources, describe the clinical course of disease; and stimulate for epidemiologic research(1,2). Ethiopia had introduced Integrated Disease Surveillance (IDS) in 1996, focusing on 17 priority communicable diseases. Two years later, in 1998, the 48th World health organization (WHO) Regional committee for Africa adopted a resolution on integrated disease surveillance of communicable diseases for early detection and efficacious response to priority communicable diseases. Ethiopia as member state endorsed this initiative, is using it, and is frequent revising of the list of priority diseases (3).

Since 2008, the Federal Ministry of Health (FMOH) has launched a reform and restructuring of the health sector in to different core processes, and in particular the disease surveillance and response with the concept of Business Process Re-engineering (BPR). This new structure is extended down to the woreda level in their capacities. The goal of PHEM was on better track and monitor diseases of public health concerns (3). The FMOH of Ethiopia identified 21 top priority diseases, which are epidemic prone, of international concern and diseases that have eradication and elimination programs for surveillance activities. These diseases are mandatory notifications, which are immediately reportable diseases and routine surveillance reported weekly (4). Malaria is one of

these 21 priority diseases reported on the weekly bases. It has a significant disease burden to the public. (4)

The purpose of evaluating public health surveillance is to ensure that problems of public health importance are being monitored efficiently and effectively. Moreover, public health surveillance system should be evaluated periodically and the evaluation should include recommendations for improving quality efficiency and usefulness. The evaluation of public health surveillance system should involve an assessment of system attributes including simplicity, flexibility, data quality, accessibility, sensitivity, predictive value positive, representativeness, timeliness and stability (5)

Malaria is a protozoa disease transmitted to man by the bite of the anopheles mosquitoes .Etiology of malaria is protozoa genus Plasmodium, four species are known to cause the disease in man namely plasmodium falciparum,vivax,ovale,malariae.Epidemiology of malaria is one of the commonest infectious disease of man having a global distributiOn with prevalence of 500 million people affected every year and about 2 million people die of malaria/year 40% of the world population living in tropics/sub tropics climates are exposed to malaria (6) . Malaria is common in both low and high land areas and epidemics are commonly observed in the latter with elevation between 1600 to 2150 meters during the months between September and December. The disease is prevalent in 75% of the country with over 40 million people at risk (8, 9).

In Ethiopia ,several factors contribute to the occurrence of malaria, however, surveillance, and monitoring systems are in place, and its epidemiology is described. (10).All human malaria parasites are found in Ethiopia, but P.falciparum and P.vivax are the commonest, accounting for 60% and 40% respectively. However, P.Ovale and P.Malariae account for less than 1 percentage of all cases.

These data can guide health managers in the decision-making needed to implement the proper strategies for control of malaria and for the prevention of future occurrence of this disease. Thus, evaluation of the existing surveillance system is important to understand gaps, suggest possible intervention and help to improve public health decision-making.

Sankura Woreda is one of the high-risk woreda for several public health emergencies. In addition, malaria is the major top ten disease of the Woreda with high frequency of epidemic and public health concern.

There for an evaluation of community based surveillance system of Sankura woreda was conducted to make recommendations that may be used to improve the Current surveillance system, preparedness, and response to possible Outbreaks in the future

Table 11: Diseases under surveillance based on the 2009E.C PHEM structure

S/No	Immediately reportable diseases	Weekly reportable diseases
1	Measles	15 Typhoid fever
2	Acute Flaccid Paralysis (AFP) /Polio	16. Meningococcal Meningitis
3	Yellow Fever	17 Epidemic typhus
4	Anthrax	18. Dysentery
5	Guineawarm/ Dranculculiasis	19 Relapsing fever
6	Cholera	20 Sever Acute Malnutrition
7	Small pox	21 .Malaria
8	Rabies	
9	Pandemic influenza	

	NNT	
11	Avian Human influenza	
12	Sever acute respiratory syndrome (SARS)	

2. Objectives

2.1 General objective

- ❖ To evaluate the performance of the existing surveillance system of malaria in Sankuru Woreda of Siltie zone.

2.2 Specific objectives

- ❖ To describe the implementation of core surveillance activities in respect to case detection, registration, confirmation, reporting, epidemic preparedness and response.
- ❖ To assess supportive activities of surveillance system such as supervision, staff training, information feedback, equipment and financial support.
- ❖ To assess the status of surveillance system attributes like sensitivity, simplicity, positive predictive value, flexibility, completeness, timeliness, acceptability, representativeness, acceptability and specificity
- ❖ To describe the major challenges faced in the process of implementing the surveillance system

3. Method and material

3.1. Study area and period

The study was conducted in Sankura woreda ,which is located in silitie zone, southern nations nationality and people regional state(SNNPR) in the north –east part of the regional administration. Sankura woreda is one of the eight administrative woreda found in Silite zone . It is located between 7and18 degrees east longitude with 3,047.83 square km area (2.75%) of the zonal area and it shares a boundary with Wulbarek woreda in the north, Lanfaro woreda in the south east, Adiya zone south west, Alaba liyu woreda in the south, and Dalocha woreda in the east with a total population of 1o7567.In addition there is one district hospital , two health centers and 30 health posts are found .The study period was from March 20 to April 30/2017. The study was conduct using descriptive cross sectional study design in governmental health facilities of Sankura woreda.

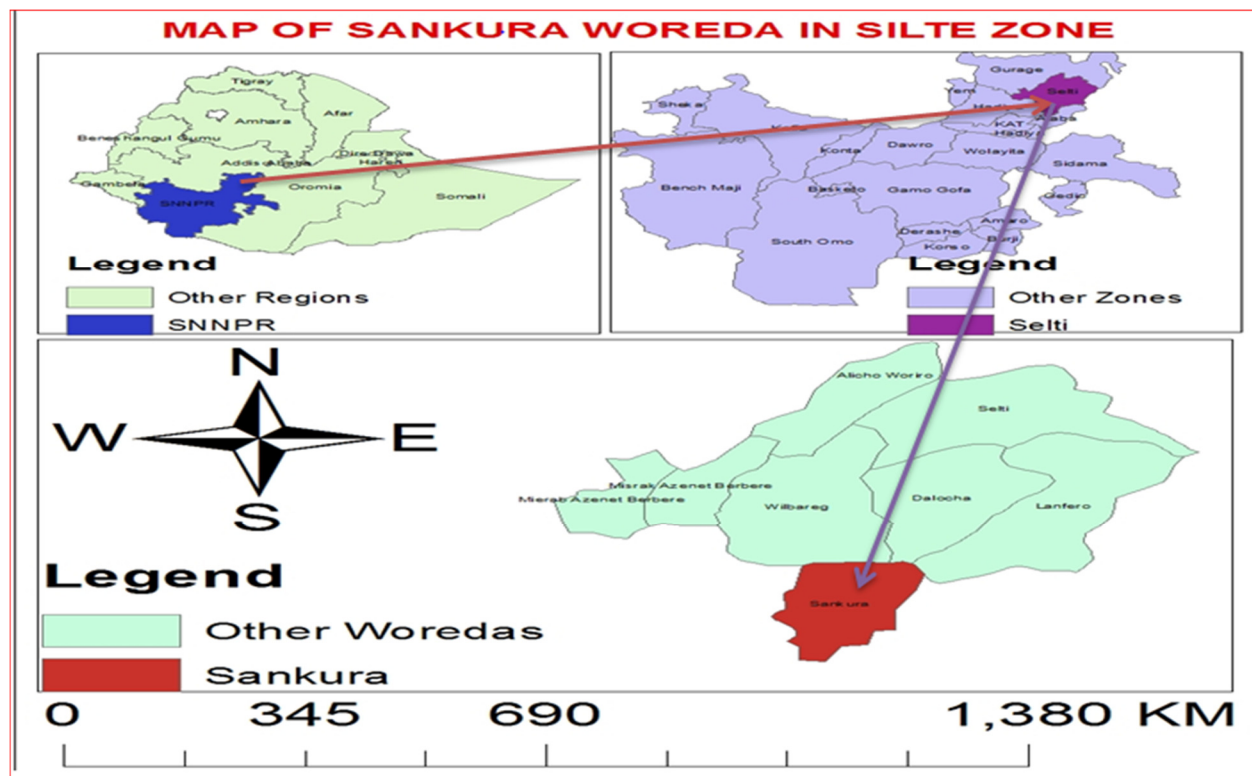


Figure 8: Map of Siltie zone and Sankura woreda in SNNPR 2017. G C

3.2 Source population

All health facilities of Sankura woreda during study period.

3.2.1 Target population

Health facilities, health offices and health post PHEM office were included.

3.2 .3 Study subject

A total of 10 study units, Woreda PHEM office, two health centre, and six health posts, one district hospital of malaria report were selected conveniently.

Table 12: List of Health Facility under the study.

No	Woreda office& Hospital	Health center	Health posts
1	Sankura Woreda PHEM	Regdina health center	Jata health post
2	Alem gebeya hospital	Getemgurbayehealth center	Gurbaye injamo health post
3			Minzo siyato health post
4			Minzo health post
5			Ziko dololo health post
6			Getem gurbaye health post

3.3 Sampling Size and sampling technique

Woreda PHEM office , TWO health centers and six health posts and one district hospital were conveniently selected for the evaluation. PHEM focal persons at woreda health offices ,health centers and hospital assigned health professionals from the selected health posts were participants of the study. The CDC “updated guidelines for evaluating public health surveillance system” published in 2001 were as a framework for the evaluation to achieve the stated objectives of the study.

3.4 Data collection tool , procedure and analysis

Principal investigator conducted data collection. Well-structured questioner was used to interview, health centers and other health facilities PHEM focal person and practical observation of documents was conducted in woreda health facilities, woreda health office. Data were collected from Primary

Data , information obtained through semi-structured key informants interviews and discussions. Secondary data collection: From previous reports and , administrative data from national guidelines, paper forms and other documentations were used. Selection of number of health facilities were making on a convenience basis taking into consideration time and transport constraints and diseases under surveillance was selecting based on the public health importance of the study area The letter of the ethical clearance pass through formal process and all the respondents were well informed about the objective of the surveillance system evaluation and had a written and oral consent from them. The data collected, from completed questionnaire were entered to Excel. To analyze the data Excel was used.

4. Case definition

Standard case definition: is a case definition that is agreed upon to be used by every health professional within the country. Standard case definition can be classified as confirmed, probable, and possible or suspected

MALARIA suspected

Any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea, and vomiting diagnosed clinically as malaria (12).

Confirmed cases of malaria.

A suspected case confirmed by microscopy or RDT for plasmodium parasites. (12)

Community case definition

Community case definition: is a case definition of disease and Conditions adapted to suit to health extension workers (HEWs) and community members

MALARIA: is any person with fever OR fever with headache, back pain chills, rigor, sweating, muscle pain, nausea and vomiting OR suspected case confirmed by RDT.

5. Operational case definitions

Malaria:- any fever case that is diagnosed by the health professionals and reported as malaria by reporting health facilities.

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

-
- Case detection: is the process of identifying cases and outbreaks.
 - Case registration: is the process of recording the identified cases
 - Case/outbreak: Confirmation: refers to the epidemiological and laboratory capacity for confirmation.
 - Reporting: Refers to the process by which surveillance data moves through the surveillance system from the point of generation.
-
- Epidemic preparedness: Refers to the existing level of preparedness for potential epidemics
 - Stake holders: The organizations or individuals that generate or use surveillance data for promotion of health, prevention and control of diseases.
 - Usefulness: Usefulness of the surveillance system is reflected by documented changes in policies and procedures because of information generated by the system.
 - Simplicity: Simplicity denotes the structure and ease of operation of the surveillance

system.

- Flexibility: Flexibility of a surveillance system is its capacity to adapt to changing information needs or operating systems within minimal additional time, personnel and funding
- Quality: The quality of data reflects the completeness and validity of the data recorded in the Woreda Health Department.
- Acceptability: Acceptability is the willingness of persons, institutions or organizations to participate in the surveillance system
- . Sensitivity: Sensitivity refers to the ability of the system to detect cases or outbreaks through trends in the surveillance data.
- Positive predictive value: Positive predictive value refers to cases that actually have the health condition in question.
- Representativeness: Representativeness refers to the extent to which the surveillance system accurately describes the occurrence of medical condition over time and their distribution in the population by place and person.
- Stability: Stability was assessed by questioning the surveillance officers on the consistency of the system

6. Dissemination of findings

The results of data analysis are communicated to , Silite Zone, woreda health offices, Health Centers and St. Paul Hospital Millennium Medical College department of Public Health Field Epidemiology

Training Program

7. Results

7.1 Meeting with stakeholders

The principal investigator conducted a brief meeting with responsible persons (Head of institution, PHEM focal person) before assessing the objective of the study and its significance, and highlighted information after assessment, at all level. This meeting was also an important first step for assessment and recommendations; which will help for the implementation of recommendations and betterment of the evaluated zone. surveillance and response of the major priority diseases of

7.2 Importance of the surveillance system

Malaria: In Sankura woreda, around 75% of the land mass were malarious putting 73,145.56 (68%) of the population are severely at risk of infection. During this 9 months 2009 Ethiopian Fiscal Year (EFY) reports cases increased three times as compared to, last year, malaria cases report indicating high malaria burden this year compared to the expected last year malaria cases per 1000 population. In 2009 EFY, 505 confirmed malaria cases were reported from the woreda which accounts 5% of outpatient visits and 3% of hospital admissions in the woreda. However, In this nine month report, no deaths were due to malaria cases (8, 9).

SNNP Region of Sankura woreda 10491 suspected malaria cases were reported during July 2017 to March 2017. Among the confirmed cases, 300 (59.4%) of them were *plasmodium falciparum* and *plasmodium vivax* were 205(40.6%). In Sankura woreda with a total 31 (100%) kebeles are reporting malaria areas.

7.1. Description of surveillance system

communicable diseases organized in two main categories, the surveillance system under public Health Emergency Management core process (PHEM) and the Health In Ethiopia, the health information system for surveillance of communicable and non-communicable diseases (HMIS). These systems are set at the central level Ministry of Health (MoH) and extending down to the regions and health facilities (periphery) levels including all governmental, non-governmental and some private health facilities.

Public Health Emergency Management (PHEM) is defined as the process of anticipating, preventing, preparing for responding to and recovering from the impact of epidemics and health

consequences of natural and manmade disasters. The sub processes identified for the process include Preparedness, Early Warning, Response and Recovery (EWRR). The early warning sub-process contains the Integrated Public Health Surveillance. This surveillance focuses on diseases, which have epidemic potential, diseases under eradication and elimination, diseases of international concern, and malnutrition. Whereas the HMIS collects all the general health related data from the health facilities including those disease under surveillance.

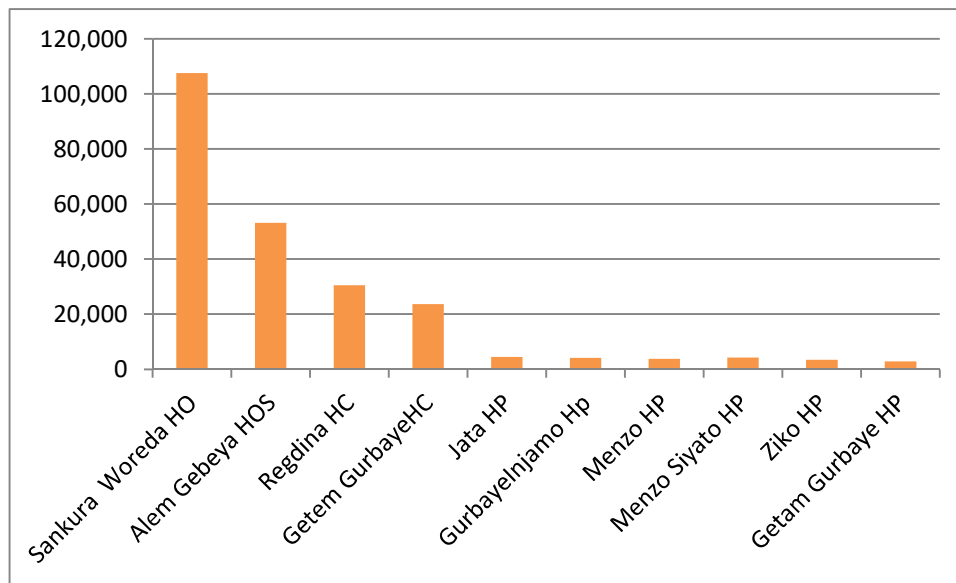


Figure 9: Population under surveillance of catchment area of Sankuru woreda administrative, 2017.

There are 107,566 total population in this particular study area of which 54,859 (51%) are females and 52,707 (49%) are males respectively. Fig 14.

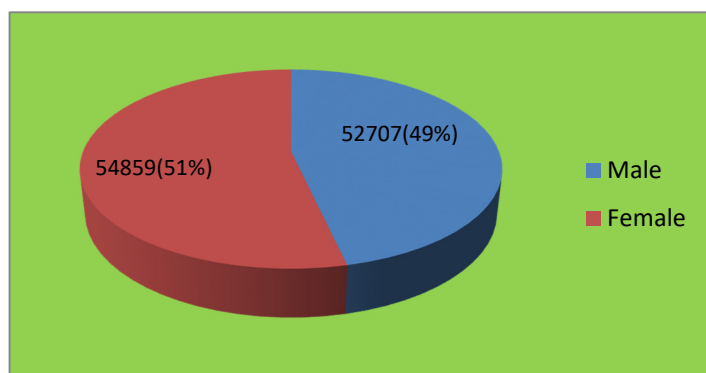


Figure 10: Sex distribution of Population under surveillance of sankura woreda Silite zone in SNNP administrative region, 2017

Targeted diseases under surveillance and diseases included under this study

Federal ministry of health of the public health emergency management core process given prioritization to those diseases that are of interest at national and international levels. Based on this PHEM core process selected 21 diseases to be included into the routine surveillance system. Of these, there are 7 weekly reportable diseases and 14 immediately reportable diseases are present. Although most diseases have a public health importance, and due to shortage of time and other resources surveillance could not carried out for all diseases and conditions. For the reason of these, of those targeted diseases under surveillance malaria covered in this study.

7.2. Core activities:

Case definition: -

According to the assessment, from 10 visited sites 8 (80%) of them had case definition for acute flaccid paralysis (AFP), Measles and neonatal tetanus (NNT). However, none of the visited institutions site had case definition for the rest priority diseases such as malaria. On the other hand, Health practitioners and surveillance officers who were interviewed during the assessment, 9/10 (90 %) of them understood the case definition clearly and apply the case definition accordingly as per the national guideline. As the health, Professionals informed us, community case definitions of the priority diseases used during health education and meetings with communities. However, some of the visited sites neither had a written community case definition nor distributed to the community.

7.3 Availability of surveillance formats and manuals

Even though reporting format is prepared and distributed from regional health bureau to woreda health offices, health facilities, there was shortage of reporting format in 4 (34 %) of the visited private health facility in the past few months however, they were used by copying the original one. In all visited health facilities and woreda they have different types of surveillance formats like weekly reporting formats, case based formats for different diseases, AFP case investigation forms, epidemic reporting format and line listing formats. In all health facilities including health center there were national manuals for surveillance.

7.4. Report completeness and timeliness

Completeness and timeliness are key indicators of reporting performance. Completeness defined as the proportion of expected reports received, and timeliness defined as the proportion of expected reports received on time. Reports were being considered late if they had not been received by the established deadline (the second day (Tuesday) of the following week at woreda level, Monday from facility to woreda level). Only the zonal PHEM used a computerized system to monitor completeness and timeliness reporting of the health facility.

The overall weekly completeness rate of reporting of the visited sites was 48 (84 %). To evaluate the time lines at health post level was difficult because there were no PHEM officers (no surveillance system) at grass root level in this time.

Communication and reporting system

1. Reporting

HF report -----Woreda Health Office ----- Monday afternoon -- Woreda Health Office---
ZONAL health office-----Tuesday afternoon ---- ZH Health office--- Regional Health Bureau-----
- Wednesday afternoon

2. Means of communication --- Health Facility-----paper/phone based report

-- Woreda Health Office----- paper /phone based report

Woreda Health Office ----- Zonal Health Department---- paper/phone based report---Zone Health
Department --- Regional Health Bureau----- Email (phone call) .

In the Woreda PHEM department , they had expected about 1,368 weekly surveillance reports in the past six months of 2016/2017 from, health centers, hospitals and other private health facilities. However, 1,152 (84%) report received from 33 health facilities. Because of lack of infrastructure like telephone and internet services, most of the time the PHEM department were collecting weekly surveillance report from health facility by reporting format (in hard copy as well as by using telephone).Whereas regional PHEM officers collect the weekly surveillance data from the zone by using telephone.

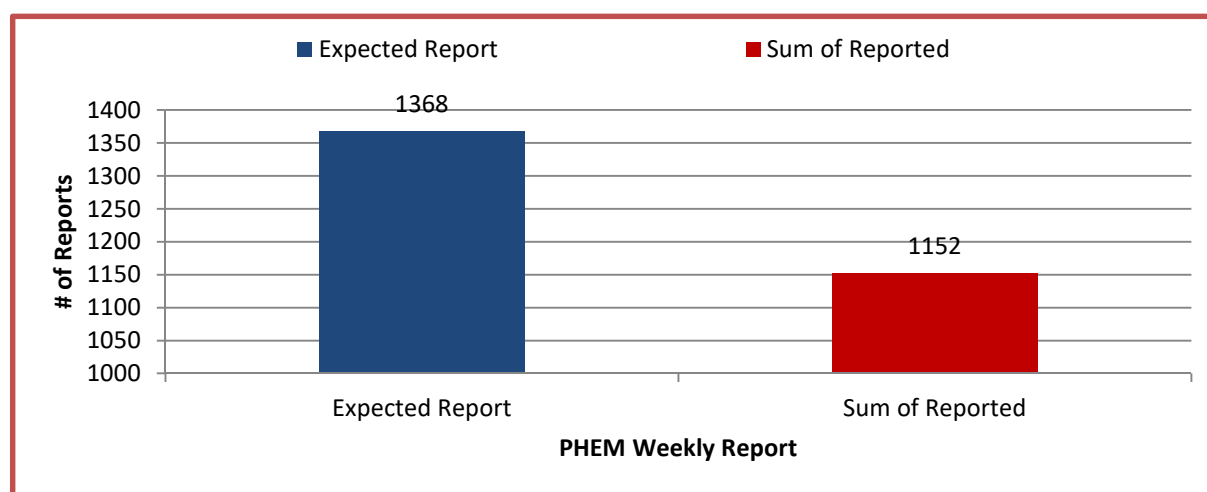


Figure 11: Annual total expected report and total received PHEM Weekly report from Sankura woreda, Silite Zone SNNPR, 2017

According to Zonal weekly report, the trend of Zonal reporting completeness was good in the Past 6 months. Within the weeks, the maximum reporting rate was 46 (80%) report and the minimum was 44 (78%).

On the other hand, at Woreda level there is a big difference between governmental and non-governmental health facilities by weekly report submission. This means, from governmental health facility all were submitted their report routinely however not all private health facilities were submitted the report timely .Also the sub city reporting completeness rate at governmental health facility was above the national target. In the last six months, on average the governmental health facilities reporting completeness rate was above 80%. In addition, within this reporting period,

only two months (July and August) registered less than 80%. In contrary, the reporting completeness rate of private health facilities were less than expected. In addition to this, due to the turnover of PHEM officers in the facilities in the previous time, we faced difficulty to evaluate the surveillance system at facility level. Moreover, in the year, 2016/2017 concerning timeliness data was not accurately available in all visited sites; because of that the timeliness of weekly surveillance report was difficult to measure accurately. The Zonal timeliness rate was measured by month from July 2016 – April 2017 for 10 months. In 2016/2017, the ten month timeliness rate of zonal was 78 %, this means, timely report of Zonal to regional.

7.5 Data analysis

In all assessed health facilities and health offices, there were assigned responsible person for report compilation but data were analyzed at zonal level only. Including Woreda level PHEM office and other health facilities , data analysis was not taken as usual routine activity. From visited health facilities, none of them was analyzing the collected surveillance data by person , time and place due to staff turnover and lack of surveillance training. However, they are planning to do in the near future. In all visited health facilities and health offices, they didnot prepared action threshold according to PHEM guideline 2012.

7.6. MALARIA Case detection and registration

Case detection of malaria was assessed by taking data from case based registration that reported to woreda health office. This helps to assess the functionality of the surveillance system of the health facilities in detecting of malaria cases. Clinical registers were available in the visited health center and hospital but the handling of registration book was poor and they used one registry for all the priority diseases, which makes difficult to collect the data easily for all the diseases. To diagnose malaria it took about 45 minutes to an hour at hosplital and health center but at health post it took less than 30 minute since they used malaria RDT kit, it is used for timely intervention. Malaria detecting reagent and RDT kit were not adequately available in all health facilities. Especially in health centers & health post most of the time RDT kits & reagents were not available.

7.7. Outbreak investigation

All the respondents from assessed health facilities and health officers responded that, they did not investigate outbreaks on tar gated surveillance disease As a result they were not used the findings for intervention, therefore, there was neither written document nor standard procedures for

outbreak investigation had seen during the assessment. One outbreak skin problem (Scabies) was reported from this visited Sankura woreda 4 months before we arrived to the Silite zone health office, but this reported disease is not targeted surveillance disease, to analyze it.

7.8. Epidemic preparedness and response

In all visited health offices, they had not experienced any shortage of drugs and supplies during epidemic time except the last year scabies epidemic. Of visited health offices, only Woreda health office had prepared written document for epidemic preparedness plan and about 100 % of the health facilities had no emergency drugs and supplies in the store. The woreda with health offices established Rapid Response Team and task force committee but it lacks continuous functionality in all health offices. The outbreaks occurred in the woreda in the previous years were responded partially within 72 hours by Zone and woreda health offices and none of visited health offices had outbreak investigation check list except zone office. All visited woreda health office were encountered shortage of budget, and they did not allocate budget for epidemic preparedness and response activities.

All respondents answered that, they have a rapid response team which is not functionally active as needed but which turns to be active after the occurrence of an epidemic. This means during epidemic, the rapid response team were well prepared but if not occur no activity was seen. All of them have neither epidemic preparedness plan nor budget line for epidemic response. In addition to this, in some health facility like health post there is stocks out of medicines and reagents were available for some epidemic prone diseases.

7.9 .Data quality

Is measured by the validness of the number of cases in registration and those in reporting format, inclusion of all the necessary variables that should filled in reporting format and summary report of immediate reportable disease and on weekly basis. For health facilities, we counted and compared the reported malaria cases with summary report, which go to higher level and registration books for the previous two weeks. Date of report received from health facility to woreda, expected number of health facilities to report and reported cases and date of report sent to next higher level observed and inconsistency of recorded dates and the actual date of report was the missed variables we found.

Reports sent by personal mobile phone call or hard copies delivered in person from governmental

health facilities (hospital ,health health center ,health post) to woreda health office. From woreda, they made a call to the Zonal PHEM department made a call to receive the report. Only the Zonal level has access to internet and can email the reports to regional health bureau. Network inaccessibility and no refunding mechanisms of personal mobile phone and transport expenses were the main problems found in the assessed sites.

7.10. Supervisions and Feedback

A. Feedback and supervision

The Woreda PHEM department conducted supportive supervision to health facilities on quarterly basis, with integration of other activities but never practiced surveillance supervision specifically in the previous time and the zonal surveillance departments cascades the same procedures to woreda health offices. Giving feed back to woreda level was performed once in the last six months. In addition, feedback from Zone to health facility was not properly performed in the past times.

B. Material resources available for surveillance

7.10.1. Resources

From visited Health facilities, all were compile weekly PHEM report manually. According to interviewed woreda response in woreda PHEM department, all woreda PHEM focal officer cannot use Microsoft office applications (MS word, MS excel); but they do have information on Ep info utilization. Regarding availability of computer and printer, health facilities PHEM unit did not have computer, printer and telephone separately as PHEM office at woreda, health center ,health post ,hospital level for data management and communication but they used commonly with woreda health office in addition at this time each woreda have computer and printer access.

The PHEM case team at woreda has not its own vehicles, which will very important during emergency. On the other hand, some facilities and woreda use personal mobile for communication especially for surveillance data reporting. There was phone call system in both health centers hospital but in the visited health post, they used personal phone; which will affect the timeliness of reports of both immediately and weekly reportable diseases.

C. Training

The visited Sankura woreda PHEM officer were trained on surveillance system but health facility (hospital, health center, health post) all surveillance focal persons responded that staffs working on surveillance units got short term training of two to five days by the Zonal health office in collaboration with WHO and other stack holders. *At the health facilities, there were turn over focal person's assignment on surveillance that was trained observed and the other health care providers did not get orientation.*

8. System Attributes:

8.1. Description of attributes of the surveillance system

A. Usefulness of the surveillance data

A public health surveillance system is considered useful if it contributes to the prevention and Control of adverse health-related events. The usefulness of community based surveillance system Was assessed by determining whether the system has fulfilled its objectives of providing Information on the trends of the conditions under surveillance and to detect unusual increments of the conditions in the community so that appropriate public health intervention could be taken. The surveillance system for malaria was useful in terms of case detection, identification and describing basic epidemiology of the disease providing case counts by person, place and time and thus can help to monitor the disease trend.

All visited health institution respondents have common understanding on usefulness of existences of public health surveillance system. Respondents believe that, if there is functional public health surveillance system; the system can detect out breaks of priority diseases early and allows accurate diagnosis, estimate the magnitude of morbidity and mortality related to these diseases including identification of factors associated with these diseases and bring us for assessment of the effect of prevention and control program.

B. Simplicity

The simplicity of a public health surveillance system refers to both its structure and ease of operation. Case definition and reporting format is clear and easy to use by all level professionals. According to the respondents, the reporting formats are also very easy to understand and fill data

by all health professionals. It only needs 5- 10 minutes to fill the form and is possible to update data on cases. It is also clear which disease to report, when to report, to whom to report and which reporting format to use. All visited site surveillance focal persons were satisfied with reporting formats and procedures.

C. Acceptability

Acceptability reflects the willingness of persons and organizations to participate in the surveillance system. In this case, the participants of the surveillance system are health facilities, health offices, and private health facilities as Organizations and health workers as individual. Therefore, all the visited sites focal persons accept and are well engaged to the surveillance activities. In general, health workers expressed , they are satisfied with their work related to surveillance. The reason why the lowest overall satisfaction level was no education and training opportunities, no per-diem for field visit and no refunding for personal mobile phone and transport expenses and ,poor means of communication, and lack of timely feedback however almost all of the interviewed surveillance focal persons were satisfied with what they were doing on surveillance.

E. Representativeness

The representativeness of the surveillance system is related to the health service coverage, the reporting rate of the health facilities, the health seeking behavior of the community, and the technical capacity of the health care providers. Even though the woreda health service coverage was ranges from 82.8 % to 98.2% . In addition, the health seeking behavior of the community is, changing day today due to awareness creation done by HEWs rounding house to house in all of the rural households which account 86.4% of communities in Sankura woreda.

F. Flexibility

A flexible public health surveillance system can adapt to changing information needs or operating conditions with little additional time, personnel, or allocated funds. Flexible systems can accommodate, for example, new health-related events, changes in case definitions or technology, and variations in funding or reporting sources. In the visited woreda health facilities, all respondents responded that the existing surveillance system is flexible in the structure and reporting format. The reporting format is open for newly emerged and reemerging diseases and conditions. All agreed on the flexibility of the reporting format.

G. Stability

After the establishment of the PHEM center the system is well functioned and structured but lack of budget and trained staff turnover affects the stability of the system. Stability refers to the reliability (i.e., the ability to collect, manage, and provide data properly without failure) and availability (the ability to be operational when it is needed) of the public health surveillance system. Stability of surveillance system as visited in Sankura woreda health PHEM office relating to data collection, data entry, and transfer is stable. However, lack of dedicated resources, shortage of budget allocation affect the stability of public health surveillance system.

H. Positive predictive value/ cases definition ability

The ability of the case definitions to detect true positive cases was assessed. It was not possible since we couldn't find an exact suspected cases of malaria in health facility registration book and formats and laboratory confirmation was not being done for all cases due to lack of reagent. We cannot determine these important attributes using data from the current surveillance system.

I. Sensitivity

Sensitivity of surveillance, system can be considered on two levels:

First at the level of case detection, second the ability of the system to detect outbreaks, including the ability to monitor changes in the number of cases over time.

In the detection of cases health facilities use loose case definition to detect malaria cases for example those with acute febrile illness send to laboratory for confirmation.

In detection of outbreaks

Outbreak detection depends on regular data analysis, health-seeking behavior of the society, availability of reagents and definition of thresholds, timeliness and completeness of reporting and population under surveillance. Reagents are not adequately available for malaria in of the visited health facilities, and descriptive analysis was not done so all this indicates, low sensitivity of the system to detect the outbreak malaria.

J. Data quality

Data quality reflects the completeness and validity of the data recorded in the public health

surveillance system .Examining the percentage of “blank” responses on surveillance forms is a straightforward and easy measure of data quality. According to the copies of weekly reports of visited sites, at some health facilities and health offices the reporting format lacks reporting date and reporting facilities name. At woreda level, ten months of weekly reports assessed and there was blank response on the report sheets. On the other hand, from all reporting sites 90% of the reporting formats were complete with necessary information including zero report.

8.2. Laboratory capacity

From all seven weekly reportable diseases, the regional laboratories have capacity to perform the test for all diseases. Regarding the laboratory capacity at Woreda health facility level, almost all health centers have the capacity to check the presence of Malaria by using blood film and mal aria detecting kit, they send specimen to regional lab. The primary complaints of laboratory staff were that they were not assigned to carry out surveillance activities. All the assessed governmental health facility, perform malaria test at the time of visit. Laboratories at different health facility perform examination of different microorganisms and do some outbreak confirmation beyond the ordinary laboratory activities.

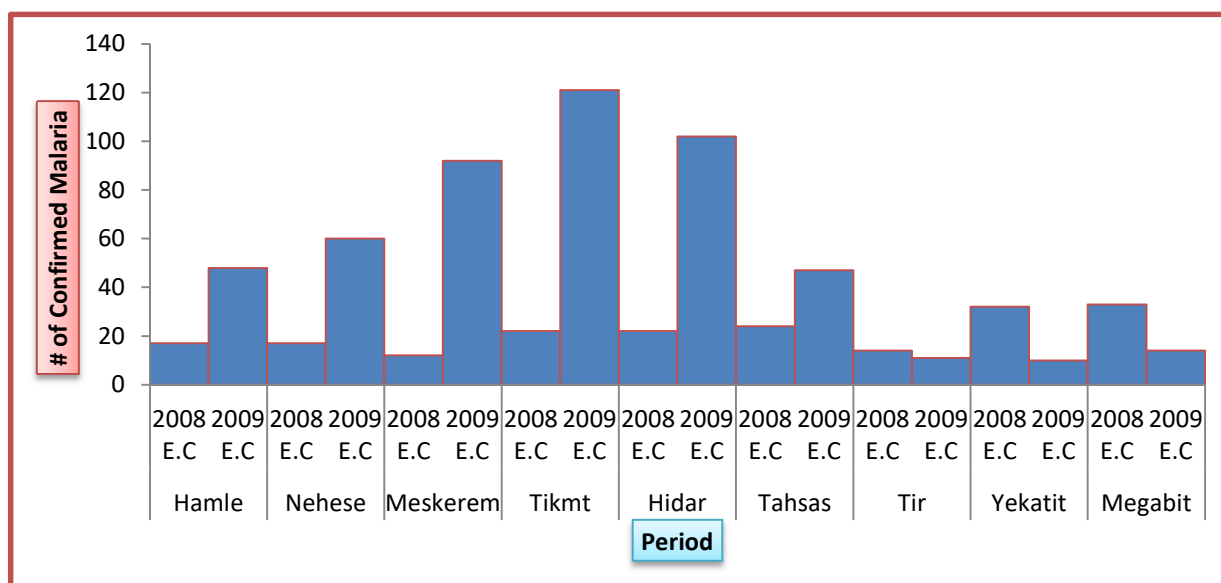


Figure 12 : SANKURA WOREDA 2008/2009 .E.C 9 malaria distribution in month

9. Discussion

In governmental health facility the completeness of data was 90.7 %, it is above the standard. In governmental health facility the completeness of data was 90.7 %, it is above the standard where as the completeness of private facility report was (90 %) also above the standard comparing to the national. However it is not regular, up and down in all the time. There were a surveillance focal person in all the visited hospital & health centre but the focal persons had work overload and lack of capacity to do data analysis regularly. There was a poor practice of interpretation and utilization of surveillance data at facility level, simply compile data from the next lower level and submitted to zonal PHEM without further analysis. Thus, the collected data has a limited usefulness at health facility level.

On the other hand, in case of the surveillance system of malaria, the confirmations of malaria parasite cases were severely affected by low sensitivity result and lack of reagents & KTS. This made it unable to calculate the PVP of the diseases in the health facility. Moreover, there was a delay of assigning PHEM focal person in each facilities and this was a problem for evaluating the surveillance system at facilities level.

However, users of the surveillance system had good knowledge of the steps and Procedures to report suspected and confirmed cases of diseases. In addition, the system is simple to operate and it is acceptable to the participating health workers as indicated by the satisfactory response rate and data quality. Regarding the important components of the system, case detection, data collection and reporting were done appropriately but data management, feedback and information dissemination are areas of the system almost not functioning.

The flow of data from lower level (health center and health post) to higher level (woreda and Zonal) is very great, however; reported cases were underestimated due to the trend of regular reporting only from governmental health facilities and it is poor from private health facility . Moreover, man power turn over, unable to trained private health personnel , lack of reagents and materials such as, Giemsa reagent, malaria kits, computer, internet access and reporting format, will affect interventions to be taken and preparation of plan.

Laboratory experience of quality assurance program and participation of the laboratory personnel in the surveillance system is found to be low. If the quality assurance is not performed it is

difficult to measure the reliability and validity of test results delivered by the laboratory personnel. In addition to this reagent is not procured by the laboratory staff of the health facilities but by pharmacist this affects both the quality of reagents procured and may not give priority for the important reagents to diagnose the priority diseases. Lack of Feedback and regular supervision, training of staff's especially private health facility, health personnel, refunding of transport and telephone expenses and per-diem has impact on the overall performance of the surveillance system in the woreda.

10. Conclusions

We concluded that supportive supervision on quarterly basis is a good trend in the Woreda PHEM center but specific surveillance system evaluation, feed back is not practiced and supervision is not supported by surveillance checklist at regular basis. Laboratory participation in surveillance is very limited and regular quality assurance system is not practiced in health facilities by the regional laboratory. Data analysis and interpretation is very low at all health facility level of the reporting unit.

11. Recommendations

Regional health laboratory should perform regular quality assurance programs and training to the laboratory professionals found in health facility.

Training should be given to the surveillance focal persons regularly even for private health personnel and reserve health professionals, including onsite training

Woreda health office should develop feedback mechanism about the reporting to lower level health facilities.

Woreda should put in place feedback and supervision specifically to surveillance system at least every quarter by using surveillance checklist.

Private health facilities should be aware the importance of reporting of cases and make them voluntary to report regularly.

12. Limitation and Challenges.

1. There was no immediately reportable disease to analyze as surveillance disease.
- 2 .The priority ten tope disease of this 9 months budget year, like typhoid disease,epidemic typhus were not specific to canalize as weekly reportable disease.
3. There were logistics and budget constraints at field base particularly for transportation.
4. The HEWs were not found at the health post most of the time.

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Annex 2: Structured questionnaire for malaria surveillance system evaluation

Introduction:

Thank you for taking the time to speak with me today. My Name is Temesgen Bekele; I am from saint Paulo's hospital millennium medical college public health department resident. I am conducting an evaluation of Malaria surveillance system and wanted to speak with health person who has assigned in surveillance system. The aim of the evaluation is to evaluate how the system is functioning and whether the intended objectives have met. Finally, recommendations will be forward to improve the system.

.Data analysis

Does the woreda level:

Describe data by person (case based, outbreaks, and sentinel)?

(Obs) Observed description of data by age and sex:

1. Yes 2. No 3. Unknown 4. Not applicable

Describe data by place?

(Obs) Observed description of data by woreda (tables, maps)

1. Yes 2. No 3. Unknown 4. Not applicable

Describe data by time?

(Obs)Observed description of data by time:

1. Yes 2.No 3. Unknown 4. Not applicable

4. Perform trend analysis?

OBEsObserved line graph of cases by time

1. Yes 2. No 3. Unknown 4. Not applicable

5. List disease(s) for which line graph is observed

Have an action threshold defined for each priority disease?

Do you have an action threshold defined for malaria, Measles, and typhoid fever?

1. Yes 2. No 3. Unknown 4. Not applicable

Who is responsible for the analysis of the collected data?

How often do you analyze the collected data?

1. Daily 3. Monthly

2. Weekly 4. Quarterly 5. Every 2 weeks 6. As needed

V. Outbreak Investigation

Percent of suspected outbreaks that were investigated in the past 10 months

23. Number of outbreaks suspected in the past year: _____

24. List the diseases: _____

25. Of those, number investigated: _____

(Observe reports)

Of the investigated outbreaks in the past 1 year, percent in which risk factors were looked for:

26. Number of outbreaks in which risk factors were looked for: _____

Of the investigated outbreaks in the past 1 year, percent in which findings were used for action

27. Number of outbreaks in which findings were used for action: _____

[Observe report]

28. Of woredas that investigated an outbreak, percent that looked for risk factors

Number of woreda that looked for risk factors [observe in reports]

29. of woreda that investigated an outbreak, percent that used the data for

Action (action include containing outbreak, improving surveillance,

Community actions)

Number of woredas that used the data for action [observe in final report]

VI. Epidemic preparedness(relevant for epidemic prone diseases)

30. Existence of a zonal level plan for epidemic preparedness and response

OBEsObserved a written plan of epidemic preparedness and response

1. Yes 2. No 3. Unknown 4. Not applicable

31. Existence of emergency stocks of drugs, vaccines, and supplies at all times in

Past 1 year:

Has the zone had emergency stocks of drugs, vaccines, and supplies at all times in past 1 year?

Yes 2. No 3. Unknown 4. Not applicable

32. Experience of a shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)

Has the woreda experienced shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)?

1. Yes 2. No 3. UN known 4. Not applicable

33. Existence of a standard case management protocol for AWD, Malaria, AFP (polio), measles

Observed the existence of a written case management protocol for at least 1 priority disease

34 .If yes, list:_____

35. Presence of a budget line for epidemic response

Is there a budget line for epidemic response?

1. Yes 2. No 3. Unknown 4. Not applicable

36. I. Existence of a woreda epidemic management committee

Observed minutes (or report) of meetings of epidemic management committee

1. Yes 2. No 3. Unknown 4. Not applicable

37. Existence of response team for epidemics

Does the woreda have a rapid response team for epidemic?

1. Yes 2. No 3. Unknown 4. Not applicable

VII. Response to epidemics

38. Ability of the woreda level to respond within 48 hours of notification of most recently reported outbreak:

Observed that the central level responded within 48 hours of notification of most recently reported outbreak (from written reports with trend and intervention)

1. Yes 2. No 3. Unknown 4. Not applicable

39. Ability of the woreda epidemic management committee to evaluate its preparedness and response activities:

Has epidemic management committee evaluated its preparedness and response activities during the past year (Observe written report to confirm)?

1. Yes 2. No 3. Unknown 4. Not applicable

VIII. Feedback

Existence of a report or bulletin that is regularly produced to disseminate surveillance data:

40. How many feedback bulletin or reports has the woreda level produced in the last year?

41. Obs: Observed the presence of a report or bulletin that is regularly produced to disseminate surveillance data

1. Yes 2. No 3. Unknown 4. Not applicable

IX. Supervision

Percent of supervisors that made the required number of supervisory visits in the past 6 months

42. How many supervisory visits have you made in the last 6 months? _____

X. Training

Percent of health personnel trained in disease surveillance

44. What percent of your subordinate personnel have been trained in surveillance? _____

45. Have you been trained in disease surveillance?

1. Yes 2. No 3. Unknown 4. Not applicable

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

I. Resources

Percent of sites that have:

50. Data management

1. Computer 3 Statistical package

2. Printer 4 Data manager

5. Photocopier

51. Communications

1 .Telephone service 2 . Satellite phone

3 .Fax e. Computers that have modems

4 .Radio call

52 .Budget line _____

53 .Logistics _____

XII. Surveillance

Have a functional computerized surveillance network

54. Do you have a computerized surveillance network at this level?

1. Yes 2. No 3. Unknown 4. Not applicable

Budget for surveillance

55.Is there a budget line for surveillance in the woreda Health office budget?

1. Yes 2. No 3. Unknown 4. Not applicable

56. If yes, what is the proportion: %

Opportunities for strengthening surveillance

XIII. Surveillance Co-ordination

Existence of focal unit for surveillance at woreda level

58.Obs

1. Yes 2. No 3. Unknown 4. Not applicable

Opportunities for integrationn

59.What opportunities are there for integration of surveillance activities and functions (core activities, training, supervision, guidelines, resources etc.

Questionnaire for Attributes and level of Usefulness:

1. Total population under surveillance_____

2. What is the incidence / Prevalence of -----in your area/in 2009 EFY

☐malaria _____ cases _____Deaths

I. Level of Usefulness of the Surveillance System for these selected priority diseases

Does the surveillance system help?

1 .To detects outbreaks of these selected priority diseases early? Yes/ No

2. To estimate the magnitude of morbidity and mortality related to this disease, including identification of factors associated with these diseases? Yes/ No

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

Observe (confirmation):

☐interventions and diseases trends analyzed ---Available //Not available

II .Describe Each System Attributes:

i. Simplicity:

1. Is the case definition of AWD, malaria, AFP (polio), and measles easy for case detection by all level health professionals? Yes/ No

2. What are the organizations which need to receive reports of the surveillance data?

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

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

5. How long does it take to have laboratory confirmation of

. Malaria

ii. 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, reporting, and formats will be difficult to implement? Yes /No

Comment:_____

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

1. Are the data collection formats for these priority diseases clear and easy to fill for all the data collectors/ reporting sites? Yes/ No

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

3. Observe: Review the last months report of these diseases

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

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

iv. 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 to)? _____

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

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: _____

v. Representativeness:

1. What is the health service coverage of the woreda ? _____

vi. Timeliness:

1.-----

2.-----

Vii .Stability:

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

Annexes 2

2:1 Data collection questionnaire for Surveillance system Evaluation at health center level

A. QUESTIONNAIRE FOR THE WEREDA HEALTH OFFICE

BACKGROUND: Region _____ zone_____ Woreda _____ Total
 population _____ -----Male_____Female_____Respondent(s)
 _____ Address: Office no
 _____ Cell phone no _____ e-mail _____

PART ONE:

A. Communication and reporting system assessment

1. Which communication material did you have? ☐ E-mail ☐ wired phone ☐ mobile ☐
radio ☐ fax ☐ other-----
2. Did you have address of regional PHEM officers? ☐ Yes ☐ No
3. If the Answer for Q2 is No, Why?-----
4. How frequently you communicate with the regional PHEM officers on emergencies and other daily activities? ☐ Daily ☐ weekly ☐ every 2 week ☐ monthly ☐ quarterly ☐ every 6 month ☐ yearly ☐ others-----
5. Did you have address of HC/PHEM focal persons? ☐ Yes ☐ No
6. If the Answer for Q5 if No, Why?-----

7. How frequently you communicate with the HC/ PHEM focal persons on emergencies and other daily activities? ☐ daily ☐ weekly ☐ every 2 week ☐ monthly ☐ quarterly ☐ every 6 month ☐ yearly ☐ others-----
8. When are you expected to send weekly report to the regional PHEM unit? ☐ Monday ☐
Tuesday ☐ Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday
9. When are you expected to receive weekly report from HCs/? ☐ Monday ☐ Tuesday ☐
Wednesday ☐ Thursday ☐ Friday ☐ Saturday ☐ Sunday
10. How is the wereda communicating the HCs/ PHEM officers in case of immediately reportable diseases? ☐ by e-mail ☐ by phone ☐ by fax ☐ regular weekly report ☐ others
11. Did you send summary or short report to the administrative /program leaders or other responsible organs on planning, prevention and control activities addressing Important issues at community level that have arisen through the surveillance system? ☐ Yes ☐ No
12. If answer for Q11 is yes to whom did you send?

13. If the Answer for Q11 is No, Why? -----

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

1. Did you have National Guide line for PHEM? ☐ Yes ☐ No ☐ Not Applicable If No, Why?

2. Did you have standard case definition for all country priority diseases? ☐ Yes ☐ No If the Answer to Q2 is NO, Why? -----

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. Did you have case based reporting formats for out breaks? ☐ Yes ☐ No ☐ NA If No, Why? -

6. Was there guide line for specimen collection, handling and transportation to the next level? ☐ Yes ☐ No ☐ NA

7. Did you have line list for reporting outbreaks? ☐ Yes ☐ No ☐ Not Applicable If No, Why

C. 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 HC and PHEM focal persons? ☐ Yes ☐ No

4. Was data compiled? ☐ Yes ☐ No

5. Did you have computer? ☐ Yes ☐ No

6. It is functional)? ☐ Yes ☐ No

7. How the data entry and compilation is accomplished? ☐ Manual ☐ Computer ☐ Other-----

8. Did 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. If the Answer for Q9 is No, why? -----

13. Please indicate the frequency of your data analysis. ☐ Weekly ☐ every two week ☐ Monthly ☐
quarterly ☐ every 6 month ☐ annually ☐ No regular time

14. Did you notify the results of your analysis to the higher level PHEM? ☐ Yes ☐ No

15. Did you notify the results of your analysis to the lower level PHEM? ☐ Yes ☐ No

D. Epidemic response and preparedness assessment

1. Did you have plan for epidemic response and preparedness? ☐ Yes ☐ No If No, Why? -----

2. Did you have emergency stocks of drugs and supplies? ☐ Yes ☐ No

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

4. Was an epidemic management committee built in your office? ☐ Yes ☐ No ☐ Not
Applicable

5. Did the epidemic management committee have regularly scheduled meeting time? ☐ Yes
☐ No 6. Was Rapid response team (RRT) built in your office? ☐ Yes ☐ No ☐ Not
Applicable

7. Did the RRT have regularly scheduled meeting time during epidemics? ☐ Yes ☐ No

8. Did you have case management protocol for epidemic prone diseases? ☐ Yes ☐ No ☐ Not
Applicable 9. Did your PHEM have multi sectoral emergency preparedness and response task
force? ☐ Yes ☐ No ☐ Not Applicable

10. Was there a budget for epidemic response? ☐ Yes ☐ No

11. Who had the authority to mobilize the emergency finance? ☐woreda head ☐ woreda health department ☐ experts ☐ other-----

12. Had you a car assigned for emergencies (PHEM)? ☐ Yes ☐ No ☐ not applicable

E. Outbreak investigation and case confirmation assessment

1. Had you investigated any outbreak in 2008 EFY? ☐ Yes ☐ No, list if any

2. Did you have outbreak investigation check list? ☐ Yes ☐ No

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

4. Where was laboratory confirmation of cases? ☐ regional lab ☐ Hospital ☐ EHNRI ☐ HC ☐ other-----

5. Who was responsible to investigate an outbreak? ☐ RRT ☐ HEWs ☐ staffs of woreda health office ☐ experts organized randomly ☐ health facility staffs ☐ other-----

----- 6. Had you faced any challenge in outbreak investigation in 2008 EFY? ☐ Yes ☐ No

7. If answer for Q 7 is yes, a) List the challenges -----

----- b) List the alternatives that you took to tackle the challenges

F. Supervision and feedback assessment

1. Did you have supervision plan in 20048 EFY? ☐ Yes ☐ No

2. If answer for Q 1 is No, how did you supervise? -----

----- 3. If for Q 1 is yes, did you supervise the HCs according to your plan in 2008 EFY? ☐ Yes ☐ No

4. If answer for Q 3 is No, what is the reason? -----

----- 5. If answer for Q 3 is yes, how many times did you supervise each HC and HP in 2008 EFY? _____

6. Had you reviewed about surveillance practice by higher level supervision in the last 12 months? ☐ Yes ☐ No
7. Did you have regular supervision checklist? ☐ Yes ☐ No
8. If answer for Q7 is No, how did you supervise the health facilities? -----
9. Were you supervised by higher level officers in 2008 EFY? ☐ Yes ☐ No
10. If answer for Q9 is yes how many times in 2008 EFY? -----
11. Did you send feedback of your supervision to the health centers (HCs) and HWs commenting/indicating their strong and weak sides? ☐ Yes ☐ No
12. If answer for Q11 is No, why? -----
- 13. If answer for Q11 is yes, for how many HCs and HEWs did you send a feedback in 2008 EFY_____
14. Had you received feedback from higher level supervisors in 2008 EFY? ☐ Yes ☐ No
15. If answer for Q14 is yes how many feedbacks did you received in 2008 EFY? -----
16. Had you faced any challenge on supervision and feedback in 2008 EFY? ☐ Yes ☐ No

PART-TWO

PART-TWO

IS THE SURVEILLANCE SYSTEM HELPFUL?

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
4. To estimate research intended to lead to prevention and control? ☐ Yes ☐ No

Describe Each System Attributes:

I. 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 to 15 min ☐ >15 min
7. How long does it take to have laboratory confirmation? -----

II. Flexibility

1. Can the current reporting formats be used for other newly occurring health event (disease) without much difficulty? ☐ 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 , Add your explanation -----

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

III. Data quality

1. Are all reported forms Complete? ☐ Yes ☐ No

2. If answer for Q1 is No, how many unfilled spaces are in your 2009 EFY report? -----

Chapter v Health Profile Description Report

4.1: Health Profile of Lommo Woreda, East Shoa zone, Oromia Region 2016.

Introduction

A community health profile is a comprehensive compilation of information about a community. The data in a profile reflect the health of a given community from many different angles. The profile includes a narrative description of the given community health status in align with historical, geographical, demographical and economical background of the area.

Assessing the health profile of a community is very important to understand the health status of the community and clearly present their needs and issues. Based on that, possible to plan, prioritize public health action and interventions accordingly. Moreover it can give baseline information to other sectors of the community. However, in Ethiopia particularly regions like Oromia, such important information is not available in a complete, organized and updated form.

Therefore, this document describes about the comprehensive health and health related profile of

Lommo Woreda east Shoa zone, Oromia Region 2008 EFY in comparison with previous year.

Rationale of the study

Health description is important for prioritizing health and health related problems of the community at any level. In related to this there is no organized, completed and well documented profile data in Lommo Woreda of Oromia region. Therefore describing the health profile of the Woreda is helpful to give evidence based information for prioritizing and instituting appropriate public health interventions in the Woreda.

Objectives

General Objective

- To describe the health and health related profile of Lume Woreda of 2016 G.C

Specific Objectives

- To assess the health and health related condition of the Woreda
- To identify problems and set priorities
- To recommend public health actions

Methods and Material

Study area: -Lume Woreda, East Showa

ZoneOromia region

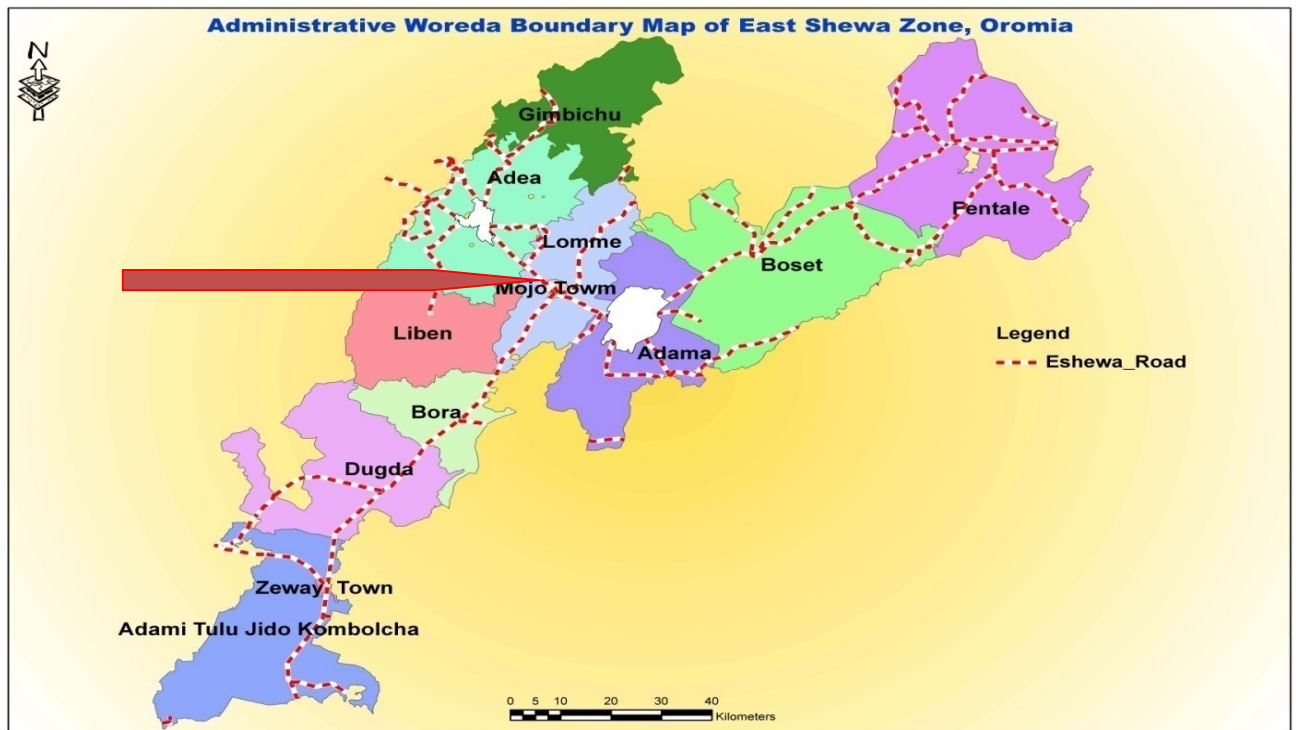


Figure 13: LumeWoreda East Shewa Zone, Oromia Region, Ethiopia, 2016.

Study Period: - Second week

April to Second week May, 2016

Study design: -Cross-sectional
descriptive

Study Units: -Woredahealth office and facilities, and otherresponsible sectors in
theWoreda

DataCollectionMethod:-Structuredquestionerswere developedand usedtocollectprimary
andsecondary data.InterviewswereconductedwithrelevantofficersoftheWoredahealth,

education, water, Agriculture, administrative and others offices based on need data

Data Analysis: -Using Microsoft
Excel

RESULTS:

Historical

Background

Lome Woreda(Modjo)islocatedinthesoutheastpartofthecountry intheGreatRift Valley.AstheWoreda advertisementoffice mentionedverbally,itwaseestablished before 100 years ago. The nameofthe Woreda derivedfromthetwo brothers; namely, Lume and Modjobefore many years the elder so called Modjo was died and were buried called mojo andthe left area was named with his brother name called Lume woreda were it is now located.It issituatedbetween1600-2348 altitudes. Itssize 752.232square kilometer.The large portionoftheworedaisoccupiedbytropical agro climate and influenced by rift valley floor tropical.

Governmental administration

The Woreda has its own council and representative in the Federal Parliament. All governmental sector offices were found in the Town of Modjo.

Lumeworedaisoneofthe10 woredainthe East Showa ZoneOromiaregionand composedof35ruralkebelesandfiveurban kebeles.Themaintownoftheworedaiscalled Modjotown,is75kmfar fromAddisAbaba tothe East direction.ItisborderedonthesouthbyBora woreda,east Adama town,ontheWestbyBishoft townandontheNorthbyAmhara region.

Geography and climate

Lomme is one of the woreda in the Oromia Regional State of Ethiopia. It is Part of the East Shoa Zone located in the Great Rift Valley, 73 km from Addis Ababa, the capital city of Ethiopia. It extends between 1600-2348 altitudes above sea level. It is located in the south west part of East Shewa Zone. It is bordered by the Amhara Regional State in the north namely; minjar and

shonkora woreda, North east Boset ,North west Gimbichu and Adaha woreda, in the East Adama and Boset, south east Bora, south west Liben chukale. Most part of the Woreda has tropical agro-climate. Though the altitude of the Woreda is tropical; the temperature of the Woreda is influenced by the Rift Valley floor topography. As a result the mean annual temperature over the vast part of the Woreda (about 95% of the Woreda area) ranges from 18-28⁰c. The rainfall is weakly bi-modal with autumn a small rainy season during the months of April and May while summer along rainy season during the months of June, July, August and September. Th. The vast area of the Woreda annual rainfall varies between 500 and 1200 mm.

Even there were areas with mean annual rainfall of greater than and less than these ranges. It has 47582 ectar lands for cultivation, 361ectar for grazing, 4178.41ectar covered with forest and it has 75220.32 ectar or 752.232kmsq.surface areas. Also, it has 3 climatic zone namely; highland, midland, lowland. Fig below

4.3. Demography

According to the 2007 census and projections, in the year 2015/16 the size of Lomme Woreda population, including 40 kebeles was 112,578 of which 57,465 (51%) male and 55208 (49%) were female which make more male than female in the sex ratio. The pyramidal age structure reflects that 52,654(46.8 %) were children under age 15 years and predominant age group accounting for nearly more than half 60,019 (53.2 %) of the total population found between 15 and 49 years, feature of this populations (between 15 and 49 years) with high fertility levels.

Most of the residents were Oromo nationalities and more than 95% of them Christian religion followers. The total household in the Woreda was 23,454with an average family size of 4.8 and with the fertility rate 2.9%.

4.4. Economic situation

Crop production was the major agricultural practice in all 35 kebeles, which make a substantial contribution to the economy. Most rural farming, transport and source of income did directly or indirectly link with Agricultural crop production. Seawage from industries, malaria breeding site from irrigation, ponds, global weather change, communicable disease continue to have major impacts on the economy, either through direct impact or indirect influence to human health.

4.5. Health budget allocation

Based on the information from the Woreda Finance & Economic Development Office, the annual budget allocated from the Region in the year 2015/16 for the Woreda was 72,987,178 ETB. Of that the amount budgeted to the Woreda Health Office was 9,005,734 (12.3%), ETB. The budget allocated for the health sector increased by 2.2 % from the previous year. Additional budget has been allocated to the Woreda Health Office from donors and partners and it was difficult to find out the recorded and documented amount of the donors and partners part.

4.6. Education

The fact that Education is the corner stone for economic development of nation and a key determinant of individual opportunities, attitudes, and economic and socioeconomic status. Studies have consistently shown that educational attainment has a strong effect on reproductive behavior, fertility, infant and child mortality and morbidity, and attitudes and awareness related to family health, use of family planning, and sanitation. In the year 2008EC, the Woreda educational office planned to enrolled about 22,852 students, However there were about 196,777 students registered of whom 54.7% were male 45.3% were female . From this, they achieved 81%.

Table 13: School Enrolment by Sex Lome Woreda Oromia Region, Ethiopia, 2016

S.N	Grade	Sex			Total		
		Male	Female		Plan	Achievement	%
1	K.G	257	197		-	454	-
2	1-8	9568	8361		20652	17,929	86.8%
3	9-10	694	514		2086	1208	57.9%
4	11-12	22	18		-	40	-
	Total	10541	9090		22,852	19631	85.9%

Reason for school drop out

1. Poor socio economic factor leads students to be engaged pre employment near by industries.
2. Went to local healers to the nearby sprite so called Tsebel .
3. They migrated Arab country for the work.
4. With the fear of abduction they went to their nearby family.

Table 14: School drop out by Lume Woreda Oromia Region, Ethiopia, 2016

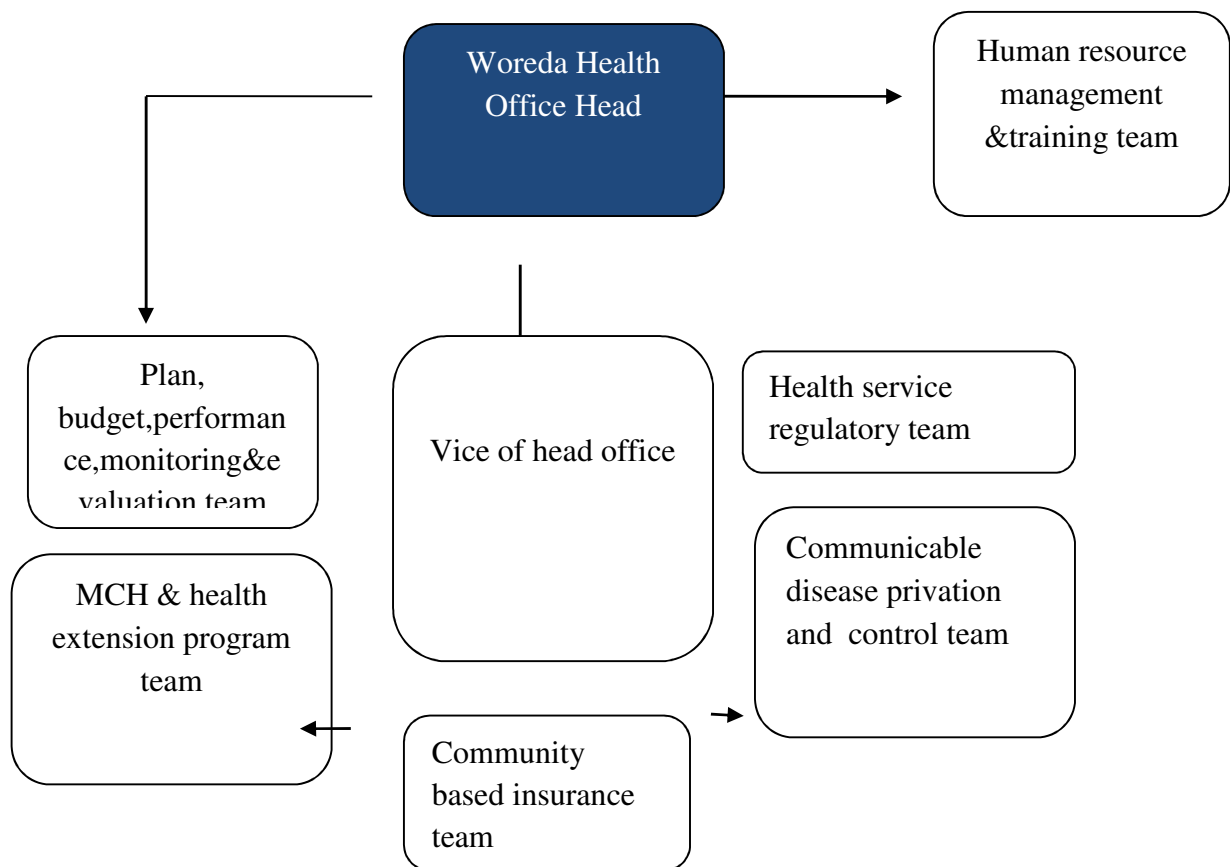
S.N	Grade	Sex		Total		%
		Male	Female	A		
1	K.G	52	46	89		-
	1-4	147	117	264		
	5-8	49	40	89		
3	9-10	7	6	13		
4	11	1	0	1		
	Total	256	209	465		

4.7. Water Supply coverage

Lume Woreda is found in the Rift Valley, which is characterized by moderate temperature, low and reliable distribution of rainfall in morthan half of kebeles .The fact that the woreda has enough surface and ground water resources. Also Awash River does cross the bounder and there is Gimbichu fantale water project and Bore hole water supply and also there is modjo river in the southern part of the woreda .The total safe water coverage was 66.3% and daily water consumption per/day per person was 25-30lt.Based on the woreda water energy Bureau .

4.8. Transport, Telecommunication, Power supply

The total length of all weather roads in the Woreda was 299.6 K.Ms, Regarding the road type, 272 K.Ms were asphalted and the remaining being dry weather roads. 35 kebeles have access to transportation and the recent cell mobile net work system covers the whole kebeles. In energy resource, almost all households and 40 kebeles were covered by hydroelectric power and solar energy respectively. More than 95% Health Center and Schools had electricity power in the Woreda.



4.9. Health Inture

Figure 14: Woreda Health Office Structure

The number of health institutions administered under the Bureau of Health that directly provides services to all people of the Woreda. In 2008 E.C there were five health centers and 35 health posts and no Hospital at woreda,, at each kebele there were 25-30 women development army ,under each team there were 1-5 groups. Also there was healthy management team(HMT) which contributed from agriculture, educational health, women and child affair, water and energy, political administration offices in the woreda that worked on in prevention and management of disaster occurrence, to give early response. Based on the health extension program one Health Post serves for 5,000 people, one Health Center Serves for 25,000 people and one District Hospital Serves 100,000 people. This made the Woreda health service coverage not 100%.

4.10 Human resource; health workers and supportive staffs

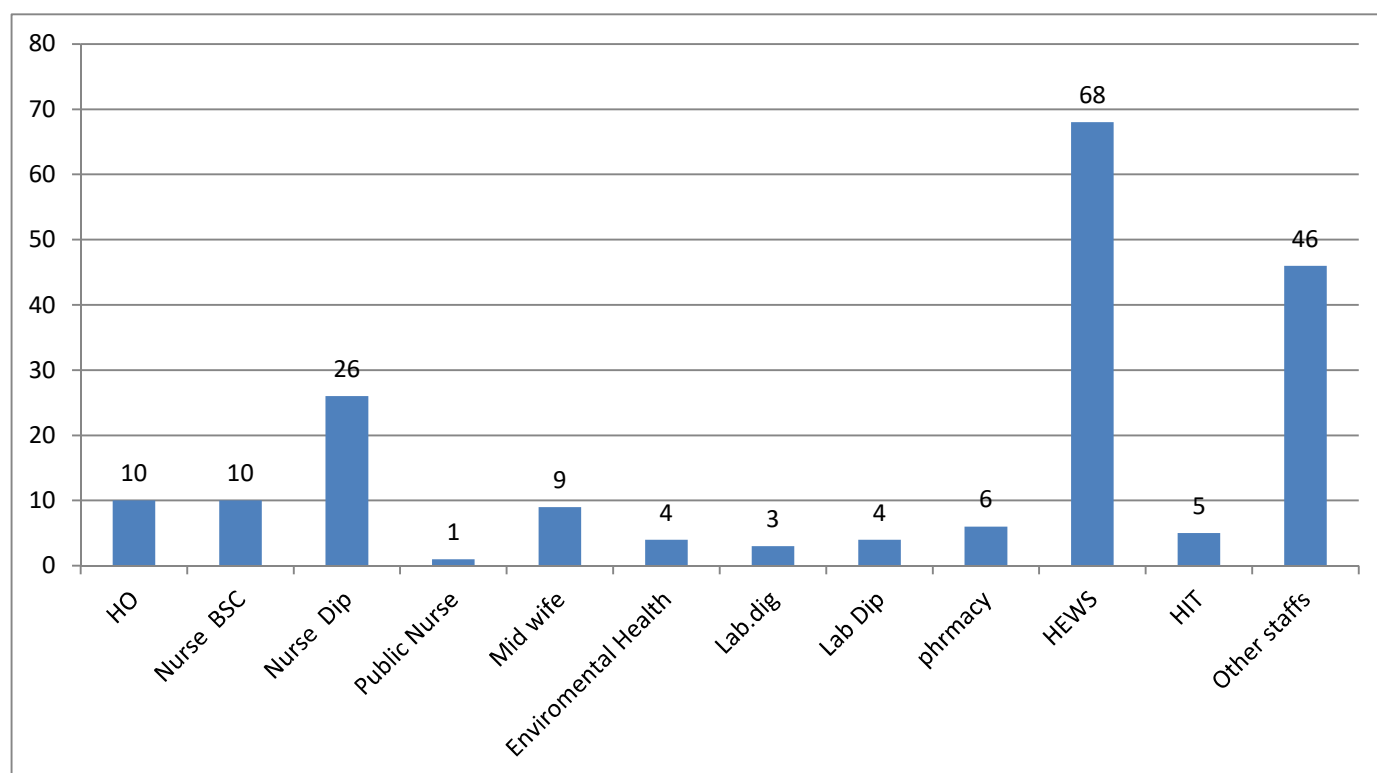


Figure 15: Health Professionals, Lume Woreda, Oromia Region, Ethiopia, 2016

4.11. Vital statics

Regarding vital statistics, there were 2.5 crude birthrates and there was no recorded crude death rate and maternal death rate the year of this 9 months physical year. Also difficult to found infant and child mortality rate, but according to their report up to this date no death rate.

4.12. Immunization Coverage

The history of immunization services in Ethiopia prior to 1980 has not been documented very well although the smallpox eradication activities have left some legendary memories. The Expanded Program on Immunization (EPI) was launched in Ethiopia in 1980 based on the international, as well as national, experiences and resources gained during the smallpox eradication activities in the late 1970s. The Lume Woreda Health Office has been delivering vaccination for children for preventing and control of vaccine-preventable diseases. The immunization coverage in the Woreda in 205/16 were (74%) for BCG, (70.8%) for Measles,

(70.8%) for DPT3, (76.3%) for PCV3, (76.3%) for PAB and (70.8%) for fully immunization, 59.9% for TT2+=pw, 35.8% for TT2+=Now and TT coverage was 95.7%.

The Woreda immunization coverage was satisfactory compared to the Region and the National immunization coverage. Therefore, the Woreda Health Bureau should do a lot to maximize the immunization coverage.

4.13. Maternal Health Service

Proper medical attention and hygienic conditions during delivery can reduce the risk of complications and infections that can cause the death or serious illness of the mother and/or the newborn baby. An important component of efforts to reduce health risks to mothers and children is increasing the proportion of babies that are delivered in health facilities. In Lume Woreda, there was 79% delivery attended by skilled birth attendants. Among those women gave birth (79%) got first antenatal care service and (65%) had attended their 4th ANC. however the delivery attended by HEWS were 0.1% and TTBAS 0% respectively.

One of the targets of the Ministry of Health, with respect to improving maternal and child health is to increase immunization coverage rate. The Woreda immunization coverage was promising to achieve the national program; similar pattern coverage (95%) is higher than compared to the national report (42.1%) in 2007E.C.

4.14. Environmental Health and Sanitation

Environmental health program was one of the main components of the current National Health Policy as it was evident that environmental factors are major determinants of public health outcomes. The main objective of the program was to contribute to the attainment of a significant reduction in morbidity and mortality due to environmental health related conditions. Ensuring adequate sanitation facilities was another Millennium Development Goal that Ethiopia shared with other countries. Regarding Latrine coverage in Lume Woreda, there were (100%) in the year 2015/16 of 9 months report. There was solid and liquid waste management facility in the Woreda. The Woreda health education did a lot on raising awareness in the population on the relationship between their health and their surroundings.

4.15. Community Health Service

There was active involvement of the community in planning and implementing of all disease prevention and control activities in the Woreda. In this process, there were 68 HEWs,

Zero TBAS b/c it was changed to women development army that gave health education on different health aspect, e.g. giving training on ART, facilitate referral linkage with HEWS.



Figure 16: Women Developmental Army Group discussion

4.16. Top ten leading causes of OPD visit (morbidity)

According to the information obtained from the Woreda Health Office, the ten leading causes of outpatient visit in the Woreda during 2008 E.C, of 9 months reports were listed below in their descending order

Table 15: Top ten causes of OPD 2008 E.C, Lume Woreda, Oromia Region, Ethiopia.

	DISEASESE(2008)	No of cases	%
1	Acute upper respiratory infection	5283	22.57%
2	Acute febrile illnesses	4861	20.77%
3	Diarrhea dds (non bloody)	3053	13.04%
4	Pneumonia	1758	7.5%
5	Dyspepsia	1636	6.99%
6	Disease of musculoskeletal system and connective tissues	1631	6.97%
7	Urinary tract infections	1537	6.57%
8	Trauma	1446	6.18
9	Skin and substances tissue	1182	5.05%

10	Bloody Diarrhea	1023	4.4%
----	-----------------	------	------

As could be seen the above one table, Acute Upper Respiratory Infections was the first from the top ten leading causes of OPD visit in this 9 months in physical year.

NB:- During this 9 months there was no admission report in the woreda health office.

4.17. Endemic diseases

Malaria

28 kebeles of the Woreda were under risk of malaria infection throughout the year .Malaria was one of the leading causes of both admission even though no admission report and outpatient visit disease of the Woredaand the population at risk were 71,789 about 4.8 house hold.ITN coverage was 31,579 number of kebele planned to conduct IRS was 10 and sprayed were10.

It was not able to see either death in adult or under five cases .There were sufficient anti malaria commodity (coartem , RDT) etc other issue. There were a lot of irrigation site that contributed for mosquito breeding site that difficult to manage by woreda health office.

4.18. HIV/AIDS prevention and control

According to the 2015/16 Lume Woreda Health office Report, there were planned to gave 4,940 screening service and there were achieved 4064 (82.3%).

There were 96 people living with HIV/AIDS in the Woreda and of those, 96 (100%) were taking anti retroviral (ART) drugs. The priority intervention area in the Woreda in relation to HIV/AIDS to date were IEC/BCC, condom promotion and distribution, voluntary counseling and testing (VCT), management of sexually transmitted infections (STIs), prevention of mother to child transmission of HIV (PMTCT), management of opportunistic infections, blood safety, infection prevention/universal precaution, care and support to the infected and affected. Currently HIV prevalence was 0.06%.

19. TB and Leprosy

In the woreda total TB case was 121 and TB detection rate 69% and cure rate was 92% success rate 10%. A total patient screened for HIV was 120 and total Leprosy case was 4.

Zero, there for the woreda health office should give attention to detect more leprosy case on the highland area of the woreda.

Table 16: TB Indicators, Lume Woreda Oromia Region, Ethiopia 2008 E.C

S.N	TB indicators	Coverage by %
1	Tuberculosis detection rate	69
2	TB treatment completion rate	96
3	Tuberculosis cure rate	92
4	TB treatment success rate	92
5	Total TB patients screened for HIV	120

Source: Lume Woreda Health office

The target set nationally for TB control in EFY 2008 was to increase TB detection rate from 36% to 59%, TB treatment Success rate was from 84% to 85%, and TB cure rate from 65% to 80% and increase the proportion of PLWHA screened for TB from 15% to 80%. In the Woreda in EFY 2008, TB detection rate and TB patients screened for HIV was strongly higher, the target set nationally for the year 2008 EFY, and TB treatment completion rate and TB treatment success rate above was the set target by the year.

There was zero leprosy case report in the Woreda in the year 2008 E.C., which was not true since leprosy is more confined to the highland parts of the country.

4.20. Nutrition, Food Shortage and any Other Disasters

In order to prevent malnutrition in children, family and community should be the first line of protection. Community-Based Nutrition (CBN) aims to build up the capacity and the ownership of communities and families to make informed decisions on child care practices. The major

implementation approaches include, growth monitoring, promotion and community conversation to assess the nutritional status of their children, analyze the causes of malnutrition and take action. There were 41 OTP site, total admissions OTP/yr 63 there is no TSF (targeted supplementary feeding) program in the woreda but there was CBN program, generally food security condition was good.

Source, Lume Woreda Health, Office

4.21 Essential drugs shortage

According to the Woreda Health Office, budget for drugs and other medical supplies was clearly known, and the Woreda Health Office pharmacist reported that there was no shortage of essential drugs in the year 2008 E.C, which was not logic from Ethiopian health context.

1. Challenges and Limitations

In the Woreda, Language, Religion and Occupational characteristics were not clearly documented, and some essential health and economic indicators like Infant mortality, Child mortality, maternal

Mortality, ITN utilization rate and Average income per capital, Fund from NGOs were also not documented. Moreover, there was also difficulty to find out detailed information about the Woreda Disaster situation.

Conclusion

This Woreda Health profile includes both previously identified health issues, and the identification of new, emerging health issues. Compared to the last one year, Acute Upper Respiratory Infection, AFI, Diarrhea, and pneumonia including malaria were the leading causes of Morbidity in the Woreda which may attribute to lack of clean drinking water, poor sanitation and low public awareness of environmental health and personal hygiene practices and low coverage of ITN. And pollution from industries was also the main problem of the Woreda.

1. Recommendations

- The Woreda immunization coverage should be registered and documented
 - Important health indicators like maternal mortality, infant mortality and child mortality should also be registered and documented.
 - Health education to the population is needed regarding environmental health, personal hygiene and the importance of ITN and IRS
 - To alleviate industrial sea wage and pollution the Woreda administration and health office should work jointly plus agricultural office and health office will work together to minimize malaria breeding site.
2. Clean water, Road, Transport, Telecommunication and power supply should sustainably available and there is a needed to maximize their coverage in the Woreda.
3. In service training will be given to health professional to increase quality of worker.

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Annex 3: Health profile assessment questionnaire Lomme Woreda, Oromia Regional State 2016

1. Historical aspects of the Woreda

- Woreda Name
- How & why the name given
- How and when the Woreda was formed_____
- Any other historical aspect about the Woreda_____

2. Geography and Climate

Woreda map_____

- Location(distance) -----Direction -----
- Altitude
- Surface Area -----
- Town __rural (land)

Geographical coordinate

- Latitude
- Longitude
- Annual rain fall(average)
- Annual temp(average)
- Climatic zones

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

Main income sources

- Agriculture
 - Cultivated area_____
 - Grazing area_____
 - Cropping seasons_____
 - Land density_____
- Livestock
- Tourism

- Trade
- Other business

House hold income source

- Agriculture_____ (#)

Educational Status

Characteristics	Frequency	Percentage
Educational institution		
K.G		
Primarily School (1-8)		
Secondary (9-10)		
Preparatory(11-12)		
College/ University		
TVET		
School health activities: Number of schools with Water supply		
Schools with functional latrines Male Female		
Schools with HIV/other Health clubs		

7. Water coverage

Characteristics	Frequency	Percentage
Total safe water coverage		
Safe water supply coverage by kebeles		
Main source of water supply		
Kebeles getting safe water		
Population getting safe water		
Daily water consumption per day per person		

Other Facilities

Characteristics	Frequency	Percentage
Transport		
Accessibility (main roads)		
Type of road		
How many kebeles have access to transportation		
Flow of transportation per day		
Telecommunication		
How many people have access to fixed telephone		
How many people have access to mobile phone (coverage)		
Post Office		
Bank		
Power supply		
How many house hold get power supply		

8. Disaster situation in the Woreda

- Was there any disaster (natural or manmade) in the Woreda in the last one year?
- Any recent disease outbreak/other public health emergency

- If yes cases_____ and deaths_____

9. District health system

-The general health system structure of the Woreda (flow chart)

-Is there health management team (HMT) at Woreda levels? Yes/no

-If yes, describe the HMT in detail (composition, functions, etc)

- Do you have non-governmental organizations working on health and health related issues? yes/no
- List the NGOs (and what they are doing) working on health and health related issues in your Woreda

10. Vital Statics and Health Indicators

- Infant Mortality Rate (IMR) _____(total <1 yr deaths this 2005yr)
- Child Mortality Rate _____(this year's total <15 yr deaths)
- Crude Birth Rate _____
- Crude Death Rate _____ (total deaths 2005yr _)
- Maternal Mortality Rate _____(2005 total maternal deaths_____)
- Contraceptive prevalence rate
- Contraceptive acceptance rate _____
- ANC rate (how many of the total expected pregnancies attended ANC)
- Percentage of deliveries attended by skilled birth attendants
- Percentage of deliveries attended by HEWs
- Percentage of deliveries attended by TBA
- PNC rate(how many of the total expected Mothers attended PNC)
- Average family size

11. Immunization Coverage

S.N	Type of Vaccine	Vaccination Status			
		PLAN TO VACCINATE	ACHIEVEMENT	PERCENTAGE	RANK
1	BCG				
2	Penta 1				
3	Penta 3				
4	Measles				
5	PCV 1				
6	PCV 3				
7	Fully immunized				
8	TT2+NPW				
9	PAB				

12. Health Service

Type and Number of Health Institution

Type	Number	Total No. of beds	HF: Population Ratio
Gov. Hospital			
Gov. Health center	Type A		
	Type B		
Private H.Fs (clinics/diag. lab/drug stores)	Clinics (all type)		
	Diag. Lab.		
	Drug store		
Gov. Health posts			

NGOs	H.Ps			
	H.Cs			
	Hospitals			
	Clinics			
OGOs	Hospitals			
	Clinics			
Health service coverage				

Type and Number of health professionals

Type	Frequency	Percentage	Health Professional: Population Ratio
Specialist			
G.P			
HO			
Nurses (Deg. and Dip.)			
Mid wife (Deg. and Dip.)			
Lab. (Deg. and Dip.)			
Pharmacy (Deg. and Dip.)			
Env. Health (Deg. and Dip.)			
HIT			
Health education			
HEWs			
Total			

13. Top causes of morbidity

Top ten leading causes of OPD visit (morbidity)

DEASESE(2003)		No of cases	%
1	Acute upper respiratory infection		
2	Diarrhea non-blood		
3	Trauma		
4	Malaria clinically		
5	Disease of musculoskeletal system and connective tissue		
6	Acute febrile illness		
7	Urinary tract infection		
8	Dyspepsia		
9	Pneumonia		
10	Helminthes		

No	DEASESE(2004)	No of cases	%
1	Acute upper respiratory infection		
2	Diarrhea non-blood		
3	Acute febrile illness		
4	Malaria clinically		
5	Disease of musculoskeletal system and connective tissue		
6	Urinary tract infection		
7	Pneumonia		
8	Dyspepsia		

14. Health budget allocation

Government

- Total budget allocated for the Woreda _____(consecutive 5 years)
- Total budget allocated for health _____ (____ %)

years	Woreda budget	Health budget	%
2007			
2008			

Funds from NGO

Total ____unknown

17. Endemic diseases

Malaria:

- Total malarious kebeles & Pop at risk
- ITNs coverage (including current dist) Total requirement
- Is there IRS this year(No of kebeles)
- Total cases/yr deaths/yr 0,<5yr cases_____ deaths_____
- Malaria supplies (Coartem, RDT, etc) shortage
- Other issues_____

TB/Leprosy:

- Total TB cases
- PTB negative

- PTB positive
- Extra PTB
- TB detection rate
- TB Rx completion rate
- TB cure rate
- TB Rx success rate
- TB defaulter
- Death on TB Rx
- Total TB patients screened for HIV
- Total Leprosy cases on Rx_____

HIV/AIDS

- Total people screened for HIV (last one year)
- VCT PIHTC PMTCT
- HIV prevalence_____
- HIV Incidence (new cases/yr)_____
- Total PLWHA

On ART on

CHAPTER 5: THESIS

ASSESSMENT OF PRACTICES OF INFECTION PREVENTION AMONG HEALTH PROFESSIONALS AT PUBLIC HEALTH FACILITIES IN SHASHEMENE TOWN, ADMINISTRATION, OROMIA REGION STATE

ABSTRACT

Background: -Health care associated infections are the worldwide public health concerns. They affect hundreds of millions of individuals globally each year. They can be transmitted by contact, droplets, air, common vehicles, and vectors. In order to prevent health care workers, patients, and other community members from health care associated infections and provide quality of care, research based proper infection prevention practices are fundamental.

Objective: - To assess safety procedure practice of infection prevention among health professionals, at public health facilities in Shashemene town Administration, Oromia, Ethiopia.

Methods: - Health facility based cross-sectional study design was conducted among 141 health professionals at public health facilities in Shashemene town administration from December 28, 2017. Data were collected by interviewer administered structured questionnaire and analyzed using SPSS version 20.0. Bivariate and Multivariate logistic regression analyses were employed to identify the associated factors with health care associated infection prevention practices. Odds ratio with 95% CI was computed to determine the presence and strength of association. P-value < 0.05 was used as cut-off point for statistical significance.

Result: - A total of 141 respondents with the response rate of 100% were participated in this study. Among the respondents 141 (59.1%) had good practice towards infection prevention. Female sex of the respondent (AOR= 3.9, 95% CI: 1.5, 10), Immunization status (AOR = 10.4, 95% CI: 2, 43, having water supply in the work room (AOR = 4.7, 95% CI: 1.7, 12.9) and Wearing personal protective (AOR=6, 95%CI: 1:35) were significantly associated with the practice of infection prevention.

Conclusion and Recommendation: -Slightly higher than half of the health professionals serving at public health facilities in Shashemene town administration had self reported good practice towards infection prevention. Female sex of the respondent, having immunization status, water supply in the work room and wearing personal protective were significantly associated with the

practice of infection prevention. Providing immunization for health professionals ,availing PPE supply for health professionals and availing water supply in the work room are highly recommended to make the practice of infection prevention objectives and fruitful at the health facilities in the study area.

Key Words: -Safety, procedure, Practice, Infection Prevention, Public health facilities, Health Professionals, Shashemene town Administration.

Introduction

Background

Infection prevention refers to policies and procedures used to prevent the spread of health care associated infection; thereby assisting the health care provider in the provision of quality of care (1). Infections acquired in health care facilities named as Health care associated infections (HCAIs) or Nosocomial, or Hospital acquired infections (HAIs). The source of HCAIs(Nosocomial) infection could be different equipment used for different procedures, patients, visitors, health personnel, other auxiliary staff and the inanimate environment .HCAIs can be transmitted by contact, droplet, air, common vehicle, and vector (1, 2). The problem of HCAIs epidemiologically categorized in to three; infection present on admission, infection appearing during hospitalization, infection appearing after discharge (1, 2).

Health care associated infections and their controls are a worldwide public health concern. The risk of acquiring HCAIs is universal and affects every health care facility and system around the globe (3, 4).The incidence, type, and magnitude of HAIs vary from one health care facility to another. Estimates of the global burden of health care associated infection are hampered by limited availability of reliable data (3). These infections are estimated approximately 10 percent of hospital admissions in industrialized countries, and estimated 15% to 31% in resource-limited countries. The risk of infection is 2-20 times higher in developing countries (Asia, Latin America, and Sub-Saharan Africa)(4).

Major HCAIs worldwide include: HIV/AIDS, Hepatitis B, Hepatitis C, Malaria (plasmodium), Pneumonia (Staphylococcus auras), TB (Mycobacterium Tuberculosis) (2, 3). These infections can affect hundreds of millions of individuals worldwide each year.

In developing countries the unsafe use of injection equipment, other medical devices, blood products, inadequate surgical procedures, and improper biomedical waste management results in thousands of infections acquired from patients and healthcare workers most of them unreported (5).

Health care associated infections are principal source of adverse health outcomes; reduce the quality of life (causes disability and emotional stress), increase morbidity and mortality. And

they can affect the quality of health care through prolonged stay in hospitalization; treatment with expensive medications; and use of other services like laboratory tests, X-rays and transfusions, this results economic burden to patients and their family(3,6, 7).

Health care workers (HCWs) have the potential for exposure to infectious materials, including body substances, contaminated medical supplies and equipment, and contaminated environment during performing their duties. Health care workers may include emergency medical service personnel, dental personnel, laboratory personnel, autopsy personnel, nurses, nursing assistants, physicians, technicians, therapists, pharmacists, students and trainees, contractual staff, and persons not directly involved in patient care but potentially exposed to infectious agents (like dietary, housekeeping, maintenance, and volunteer personnel (8).

Proper infection prevention practices are fundamental to prevent healthcare workers, patients, and other communities from health care associated infections and provide quality of care (9). Infection prevention practice e reduces the transmission of infection from patients to health care workers, other patients and attendants (10).

Statement of the Problem

The findings of previously conducted studies in different health care facilities in Ethiopia on the assessment of practice towards infection prevention among health professionals indicated the health professionals had in adequate practice towards infection prevention. For instance a study conducted in Amhara Regional State Referral Hospitals, Northwest Ethiopia reported only 40.7% of the respondents had good knowledge and 48.7% of the respondents had good practice on surgical site infection prevention (11). Another study from Addis Ababa public health facilities reported 63.9% of the respondents had good knowledge and 48.6% of respondents had good practice on TB infection control (12). A study completed at Haramaya University, college of medicine and health science students finding showed 43.8% of the respondents had good knowledge and only 10.6% of the respondents had good practice of prevention of the transmission of HBV (13).

Furthermore there was no study conducted on assessment of practice of health professionals towards infection prevention at public health facilities in Shashemene town administration .Hence this study was aimed to assess the practice of health professionals towards infection prevention at public health facilities of Shashemene town administration. Therefore the findings

of this study are expected to provide information about the level of safety procedure and practice of infection prevention among health professionals towards infection prevention in public health facilities in the study area.

Significance of the study

Health care associated infections (HCAIs) are the worldwide public health concerns. They affect every health care facility and system around the globe .HCAIs can affect hundreds of millions of individuals worldwide each year (3, 4).In developing countries the risk of acquiring infection is 2-20 times higher than industrialized countries (4).HCAIs have negative impacts on health and quality of care; reduce the quality of life (causes disability and emotional stress), increase morbidity and mortality, and can affect the quality of health care through prolonged stay hospitalization and treatment with expensive medications this results economic burden to the patient and their family(3,6,7).

Equipments used for different procedures, patients, visitors, health care provider, other auxiliary staff and the inanimate environment are the source of infections in health care facilities (1, 2).Health professionals have the potential for exposure to infectious materials, including blood or body splash, contaminated medical supplies and equipment, and contaminated environment during performing their duties (8).

Previous studies conducted in Ethiopia on the assessment of practice, towards infection prevention among health professionals are limited and the findings of those studies indicated that the health professionals had inadequate practice towards infection prevention. There for, this study was aimed to further investigate the level of practices, and associated factors towards infection prevention among health professional in the study area. Thus, this study result will be significant input in identifying gaps and improving the practice of health professionals towards infection prevention at the health facility level in the study area. And in order to prevent health care workers, patients, and other community members from health care associated infections and provide quality of care, research based proper infection prevention practices are fundamentals (9).

Furthermore the finding of this study could provide baseline information for decision-makers to put appropriate intervention on the, practices of infection prevention among health professionals working at public health facilities.

Literature Review

Practice of health professionals towards infection prevention in some developing countries:

The findings of a study conducted in Palestinian hospitals showed 91.1% of the respondents had good practice of infection control measures and 80.8% were vaccinated for hepatitis B. Sex of the respondents was significantly associated with practice of infection control measures. Being females were about 8.6 times more likely had good practiced of infection control measure than males (17). Another study from Nepalese result indicated that 70% of the respondents had good practice of hand washing, from those 56% of doctors were practiced hand washing before and after examination of patients (15). A study conducted in Nigeria finding revealed 50.8% of the respondents had good practice on infection control standard precaution (16).

Infection, 70.4%

Practice of health professionals towards infection prevention in Ethiopia:-

The findings of a study conducted in Amhara Regional State Referral Hospitals, North-West Ethiopia indicated 48.7% of the respondents had good practice of surgical site infection (SSI) prevention. The socio-demographic factors associated with the practice of prevention of SSI were age, sex, and educational level of the respondents. Those respondents who are above 30 years old were about 2 times more likely had good practice of SSI prevention than those who are less or 30 years, being female respondents were about 2 times more likely had good practice of SSI prevention than male respondents, and those respondents who had diploma were about 2 times more likely had good practice of prevention of SSI than those who had B Sc degree or higher (11).

The result of a study conducted in Addis Ababa indicated 7% of Physicians were performed hand hygiene before patient contact, and 48% were after patient contact (21). Another study conducted in Addis Ababa at public health facilities result revealed 48.6% of the respondents had good Practice on TBIC. Among the respondents 23% were received training on TBIC. Work experience and having training on TB infection control were significantly associated with the practice of TB infection control. Those respondents who had experience in TB clinic were about 2 times more likely to have good practice of TB infection control than those who had not experience in TB clinic, and those respondents who being trained on TB infection control were about 1.4 times more likely to have good practice of TB infection control than those who were

not trained. Those respondents who had diploma had more likely practiced TBIC than those respondents who had first degree and above (12). Similar study conducted in Northwest Ethiopia result revealed 63.2% of the respondents had good practice on TBCI (18).

The finding of a study conducted at University of Haramaya, college of medical and health science indicated only 10.6% of the respondents had good practice towards prevention of hepatitis B. Among the respondents 24% were received training on prevention of hepatitis B infection. Only 13.4% of the respondents were vaccinated for against hepatitis B virus (13).

The findings of a study conducted in Gondar University, Northwest Ethiopia indicated that 33.8% of the respondents had ever exposed to blood, body fluids, needle sticks or sharp material injury (20).

The findings of a study done in Mizan-Aman general hospital revealed 68.7% of the respondents had practiced hand washing before examining the patients. Regarding personal protective equipment; 98.5% of the respondents were used gown, 90.4% used examination glove, 100% used utility glove, 54.8% used head cover, 64.4% used mask, 57.7% used apron, 43.7% used eye protectors, and 54.8% boots/shoes. Among the respondents 29.6% had ever exposed to needle stick injury, 23.4% had ever exposed to sharp injury and 45.2% had ever had blood or body fluid splash. Among the respondents 79.2% were used safety box for collection of sharp materials (21).

Conceptual Framework

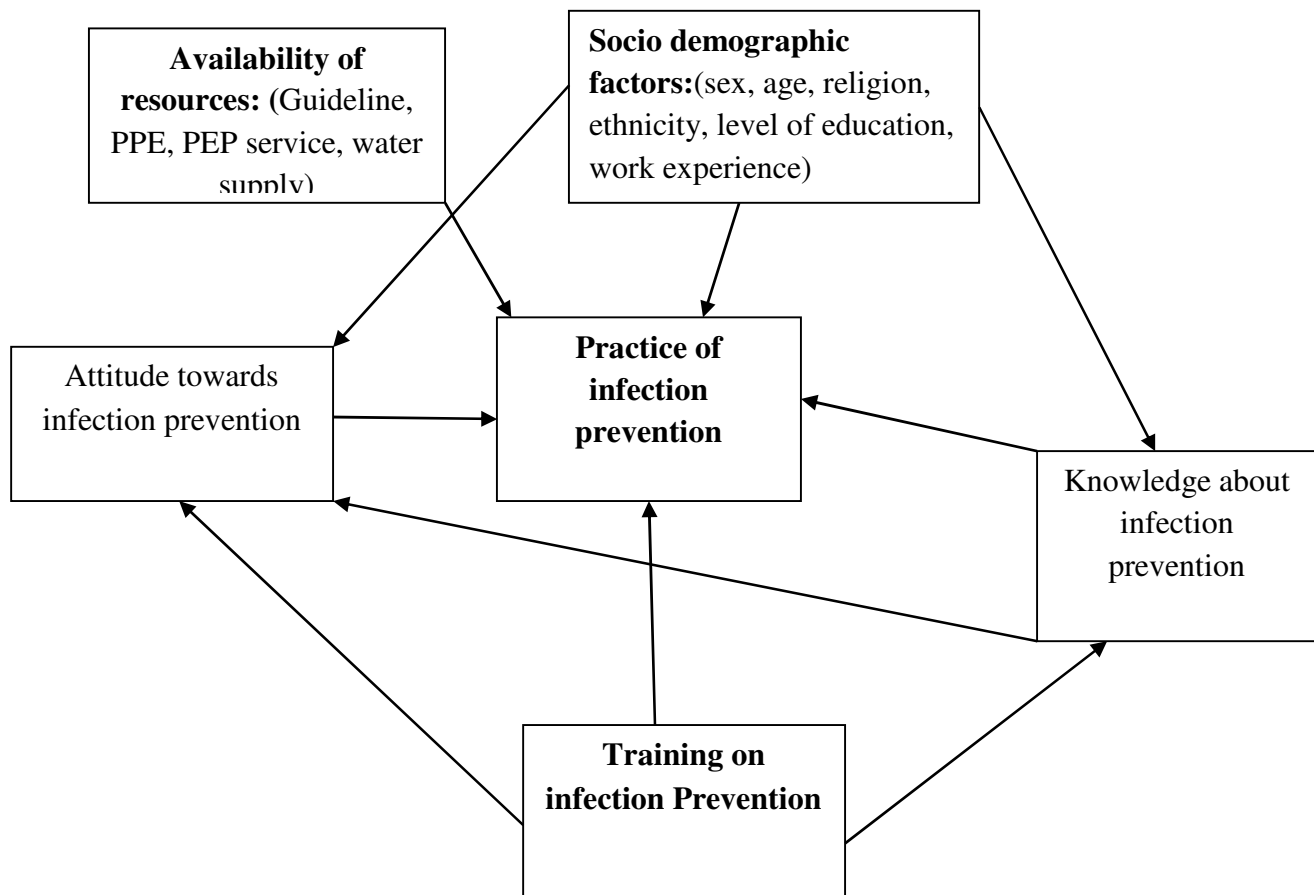


Figure 17: Conceptual Framework of factors associated with practice of infection prevention

Among health professionals working at public health facilities of Shashemene town administration, Oromia, Ethiopia, 2018.

General Objective

- To assess the level of Safety procedure and associative factors of infection prevention practice among health professionals, at public health facilities of Shashemene town Administration, Oromia, Ethiopia 2017.

Specific Objectives

- To assess the level of safety procedure practice of infection among health professional
- To identify factors associated with practices of infection prevention among health professionals in the study area.

Methods

Study Design and Setting

Health facility based cross-sectional study design was conducted among 141 health professionals at public health facilities in Shashemene town administration from December 1-28, 2017. Shashemene is the capital town of West Arsi Zone, Oromia Regional state. The town is located in the southern part of the region at about 250 kms away from the capital city Addis Ababa on the main road that connects Ethiopia to the neighboring country Kenya. Administratively, the town is divided in to eight sub-cities. According to the national census of 2007 the total population of the city for the year 2017 was estimated to be 266.775, the male population accounts 50.8 %(135,566) and the female population with 49.2 %(131,209) (Source: Shashemene town Administration Health Department). The town has one governmental hospital, three health centers, and no health post. Health professionals who were working at public health facilities at different levels during the study period in Shashemene town administration were 218 (Source: Shashemene town Administration Health Department Human Resource Management Supportive Process).

Source and Study Population

Source Population

All health professionals' at public health facilities of Shashemene town administration were source population.

Study Population

Randomly selected health professionals who were working at public health facilities of shashemene town randomly identified were study population. They were composed of physicians, health officers, nurses, laboratory, pharmacy, and environmental health professionals.

Inclusion Criteria

All health professionals on duty during data collection period in selected health facilities and had shown willingness to participate in the study voluntarily included in the study.

Exclusion Criteria

Those who were not willing to provide the required formation were being excluded from the study.

Sample Size Determination

The samples size will be calculated by using a single population proportion formula $n = (Z_{\alpha/2})^2 \cdot P(1-p)/d^2$, by considering proportion of knowledge and practice of infection prevention method: 40.7%, and 48.7% respectively, from a study was conducted in Northwest Ethiopia on Surgical Site Infection (13), proportion of attitude 42.2% from a study was conducted in Mizan-Aman hospital (19). And associated factor with practice of infection prevention calculated by using proportion (P) = 0.5% (was not calculated for previous studies), power = 80%, CI= 95%, and adjusted odds ratio (AOR) of being ever trained on infection prevention (AOR=1.95) taken from a study was conducted in Northwest Ethiopia (13) and calculated by Epi-Info version 7.

The assumption where; n is the sample size where, $Z_{\alpha/2} = 1.96$, at 95% confidence interval, marginal error (d) = 5%.

For 1st specific objective

$$n = \frac{z^2 p(1-p)}{d^2} = (1.96)^2 (0.487 \times 0.513) / (0.05)^2 = 384$$

By adding 5% non-response rate = $384 + 19 = 403$

Since the total population is less than 10,000, by using correction formula

$$nf = \frac{403}{1 + \frac{403}{218}} = 141$$

For the 2nd specific objective

$$n = \frac{z^2 p(p-1)}{d^2} = (1.96)^2 (0.5 \times 0.5) / (0.05)^2 = 384$$

5% non-response rate = $384 + 19 = 403$

$$nf = \frac{403}{1 + \frac{403}{218}} = 141$$

Accordingly, the calculated sample size becomes 141 and 141 for the level of, practice and associated factor (training) respectively. Then, I will take one of the sample size which is 141.

Sampling Procedure

Melaka odda general hospital and three health center were selected purposively (the only hospital governed by Shashemene town Administration) , in Shashemene town administration. The sample size was allocated proportionally to each health facility based on the size of health professionals they have. Then the actual study subjects were selected from each health facility by simple random sampling technique.

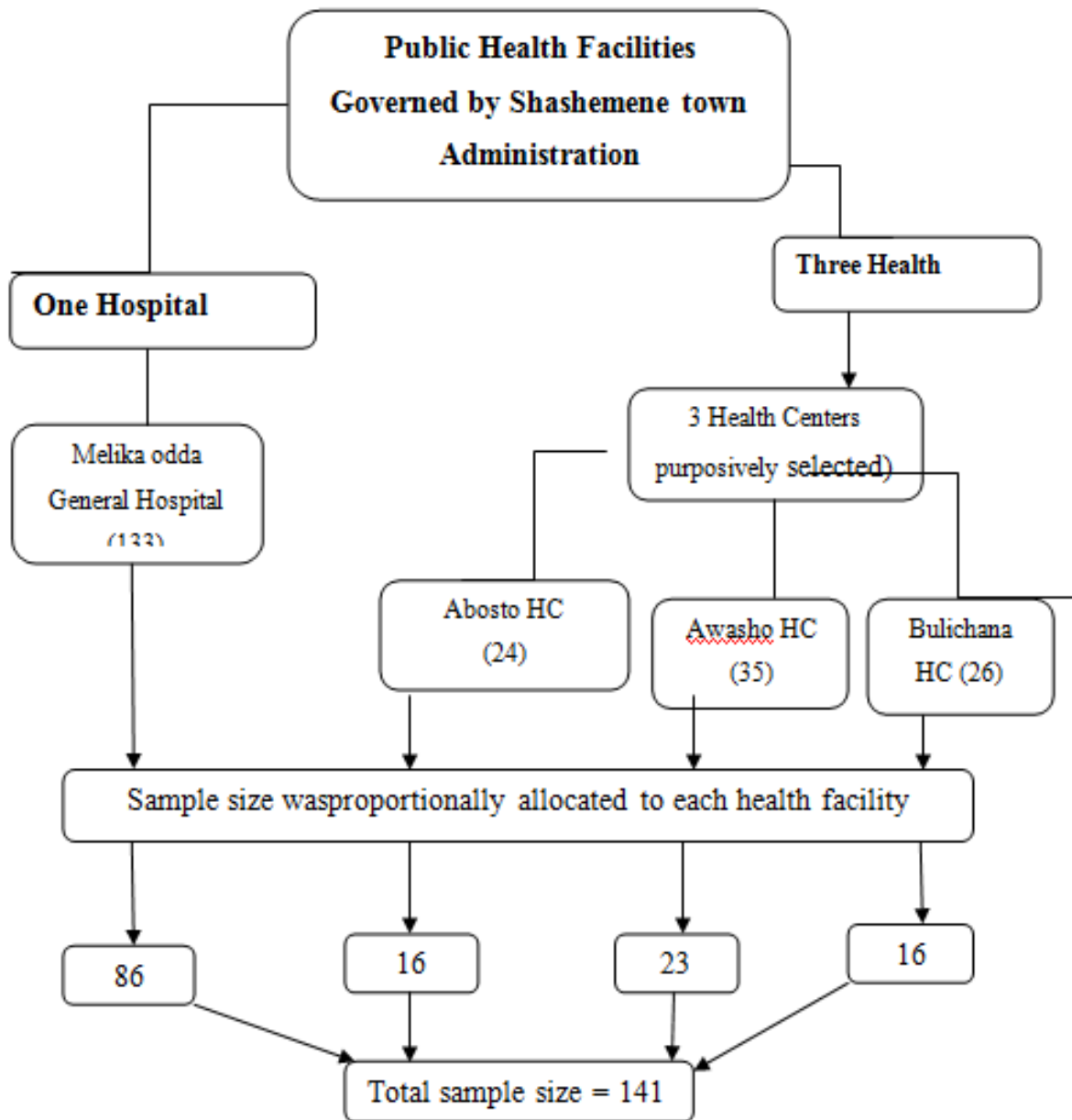


Figure 18: Schematic presentation of sampling procedures on practice towards infection prevention among health professionals at public health facilities in Shashemene town administration, Oromia, Ethiopia, and December 2018.

Data Collection

The data were collected using interviewer administered and structured questionnaire prepared in English and then translated in to Amharic for its actual implementation. The structured questionnaire consists of socio-demographic information, and practice of health professionals towards infection prevention. The data collectors and supervisors were health professionals who were not working in selected health facilities. They were trained for two days on the objectives and contents of assessment tool, importance of confidentiality and timely collection of data from respective health facilities.

Study Variables

Dependent /Outcome variable

- Practice of infection prevention among health professionals.

Independent variables

- The socio-demographic characteristics (sex, age, religion, ethnicity, level of education, work experience)
- Training on infection prevention.
- Availability of resource (Guideline, PPE, water supply)

Operational definition

Practice: - Practice of individual health professional was categorized into good practice and poor practice. Health professional who scored above the mean value of correct answer was considered as good practice and scored less than the mean value of correct answer was considered as poor practice of infection prevention.

Practice of respondents towards infection prevention was assessed by 12 questions. Each question had 1 mark. Respondent who give the correct answer for each question scores 1, if not score 0. The practice responses for individuals were counted and summed up to give the overall total practice scores and the mean practice score was calculated. The mean practice score was 7.9.

Data Quality Control

The questionnaire that was prepared first in English was translated in to Amharic then back to English in order to ensure consistency and accuracy in the message to be communicated . The data collectors and supervisors were trained for two days. A questioner was pre-tested using about 10%of the total sample size in one of the health centers other than targeted for the actual data collection. Accordingly some unnecessary wordings and ambiguous questions were either removed or revised for better clarity and sense during the actual data collection. The quality of data was monitored frequently in the field through close supervision of data collectors. The completed questioners were checked for their completeness, accuracy and consistency by supervisor and principal investigator before leaving the respective health facilities.

Data Processing, Analysis and Interpretations

The collected data were entered, coded, cleaned, and analyzed carefully using computer software SPSS version20.Descriptive statistics (frequencies and percentage) were computed for different study variables. Bivariate and multivariate analysis were carried out using logistic regression to evaluate the relationship between the outcome variable (practice of infection prevention) and independent variables. Variables those have p-value < 0.2 in the Bivariate analysis was entered in to multivariable logistic regression analysis to control the possible effects of confounders using backward regression technique. Odds ratio (OR) with 95% confidence intervals (CIs) was used as an indicators of the strength of association between dependent and independent variables. P-value < 0.05 was used as cut off point for statistical significance.

Ethical Consideration

Ethical approval was obtained from St Paul's Hospital Millennium Medical Collage Institutional Review Board. Official letters of Permission were written from Shashemene town Administration Health Department and submitted to the selected health facilities for study. Informed written consent was obtained from each study participant. Participant involvement in the study was on voluntary bases. Before the interview clear explanations were given to the respondents about the objective, procedure, benefit and potential risk. Study participants were well informed they did not provide any incentive from participated in the study, and participated in the study had not physical, social and psychological harm. Confidentiality was maintained by omitting personal identifier from the questionnaire and the filled questionnaire had not accessed to any other person except for the investigator and research team. Study subjects were clearly

communicated that they had full right to withdraw from the study even after they had started to respond at any time without restriction if they needed to do so.

Dissemination of Findings

The findings of this study will be disseminated to the Department of Public Health, SPHMMC, Shashemene Town Administration Health Department, Oromia Regional Health Bureau, Federal Ministry of Health, and all other concerned bodies.

Results

Socio-demographic Characteristics

A total of 141 health professionals were sampled from four health facilities (Melika odda General Hospital, Abosto, Awasho, and Bulichana health centers). From the total study subjects, 141(100%) completed the interviewer administered questionnaire. Among the respondents 75 (53.2 %) were females and 66(46.8%) were male respectively. The age of respondents ranges from 22 to 51 years and the mean age was 30.82 with (SD=6.18gm). Most of the respondents 70(50.0%) were between the age group of 26 to 35 years. Majority or 111(78.7%) of the respondents were Oromo in their ethnicity, and 54(38.3%) were Orthodox religion followers, 46(32.6%) were Muslim religion followers and 39(27.7%) were protestant religion followers respectively. Regarding the educational background 76(53.9%) of the respondents had first degree, 58(41.1%) were diploma holder and 7 (5.0%) were did their Specialization, Considering their work experience 90 (63.8%) of the respondent had above five years of work experience. Only 63(44.0%) of the respondents were received infection prevention training (**Table 1**).

Table 17: Socio-Demographic characteristics of health professionals working at public health facilities in Shashemene town administration, Oromia, January 2018

Variables	Category	Number	Percent
Sex	Male	66	46.8
	Female	75	53.2
Age	<=25	31	22.0
	26-35	70	49.6
	>35	40	28.4
Religion	Orthodox	54	38.3
	Muslim	46	32.6
	Protestant	39	27.7
	Others	2	1.4
Ethnicity	Oromo	111	78.7
	Amhara	28	19.9
	Tigre	2	1.4
Educational Level	Diploma	58	41.1
	First degree and above	83	58.9

Work experience	<=2 years	24	17.0
	3 – 5 years	27	19.1
	> 5 years	90	63.8
Participation on IP training	Yes	63	44.0
	No	78	56.0
Last time on IP training participation	6 month	8	16
	12 month	29	20
	>=24 month	26	4.4
Having IP guideline	Yes	50	35.5
	No	91	64.5
Functional water supply system in the room	Yes	85	60.3
	No	29	20.6
If no water supply system, availing water by bucket/ container	Yes	29	20.0
	No	112	79.4

NB: - IP (Infection Prevention)

Table 18: Knowledge related responses of health professionals towards infection prevention at public health facilities in Shashemene town Administration, Oromia, January 2018.

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<i>Common health care associated infections (HCAs) are</i>	HBV	115	81.6
	HCV	123	87.2
	HIVAIDs	104	73.8
	TB	83	58.9
	Malaria	23	16.4
<i>Transmission mechanisms of HCAs</i>	Sharp/needle stick injury	103	72.9
	Blood/body fluid splash	111	79.0
	Inhalation	76	55.1
	Contact	64	44.9
<i>Possible solution for reduction of HCAs</i>	Training on IP	107	76
	Adequate supply of PPE	102	72.9
	Follow operational procedure	83	58.9
<i>HCA pathogen can found normal, intact of patient</i>	Yes	97	68.9
<i>Importance of hand washing before and after any procedure</i>	Yes	138	97.8
<i>Wearing the same pair of glove for multiple patient has a problem</i>	Yes	122	86.2

<i>PPE does not provide complete protection against acquiring infections</i>	Yes	55	39.1
<i>Preparation of 0.5% chlorine solution</i>	Yes	128	90.7
<i>Importance of sterilization of medical equipment</i>	Yes	139	98.7
<i>Separation of wastes at generation point reduce risk of infection</i>	Yes	132	93.8
<i>Wastes included under infectious waste</i>	Contaminated sharp materials	134	94.7
	Contaminated gauze, dressings, used glove	96	68.4
	Anatomical waste	95	67.6
<i>Level of safety box should be filled before closing</i>	(3/4)	117	82.7
<i>Adequate lighting and ventilation of work room reduces risk of infection</i>	Yes	134	94.7
<i>High traffic flow increases risk of infection</i>	Yes	134	95.1

Practice of health professionals towards infection prevention

The finding of this study revealed 84 (59.1%) of the respondents had good practice towards infection prevention. The mean practice score of the respondents was 9.7 with SD=2.67. The respondents' practice score ranges from 6 to 13. Among the respondents 12 (5.3%) were able to score the maximum result which was 12 while 5 (2.2%) of the respondents score the minimum practice score which was 7. Practice related responses of health professionals towards infection prevention summarized in table 3.

Table 19: Practice related responses of health professionals towards infection prevention at public health facilities of Shashemene town administration, Oromia, January 2018.

Variables	Category	Frequency	Percentage
Hand hygiene practice	Before and after each procedure	135	95.8
	Before putting in glove	42	29.8
	After removing glove	116	82.3.
	After handling of contaminated objects	129	91.5
Always practicing hand washing	Yes	100	70.9
Material used for hand hygiene	Only water	2	1.4
	Soap with water	83	58.9
	Anti- microbial	4	2.8
	Alcohol-based hand rub	16	11.3
Reasons for not always practiced hand washing	Shortage of water	85	60.3
	Work load	37	26.2
	Negligence	19	13.5
Wearing PPE while at work	Yes	131	92.2
PPE worn while at work	Gown	116	82.3
	Glove	96	68.1
	Head cover	19	13.5
	Mask	35	24.4
	Eye protector	25	17.7
	Boots/shoes	28	19.9
	Apron	30	21.3

Reasons for not to worn full desired PPE	Difficulty with work PPE	34	24.11
	Always not necessary	76	53.9
	Out of stock	31	21.9
Vaccinated for HBV	Yes	127	90.1
Reasons for not vaccinated for HBV	Vaccine not available	108	76.6
	Negligence	33	23.4
Disinfection of medical equipment	Yes	109	77.3
Sterilization of medical equipment	Yes	94	66.7
Ever had sharp injury	Yes	42	29.8
How to exposed to sharp injury	During recap of needle	14	33.3
	By sudden movement of patient	18	42.9
	During sharp waste collection	5	11.9
	Other(suturing and sample taking)	5	11.9
How many times exposed to sharp injury	One time	25	59.5
	Two times	13	31.0
	More than two times	4	9.5
Ever had blood/body fluid splash	Yes	85	60.3
Measure taken after sharp and body fluid splash injury	Washed with soap and water	48	56.5
	Washed with alcohol, chlorine	32	52.4
	Took Post exposure prophylaxis	15	35.7
Waste collection in separate and labeled container	Yes	122	86.5

Sharp waste collection in safety box	Yes	127	90.1
Location of safety box	Located close to the item is used	106	75.2

Regarding hand hygiene; majority (95.8%) of the respondents were practiced hand hygiene before, after patient contact or any procedure and about 91.5% of the respondents were practicing hand washing procedure after handling contaminated object, general when completing the procedure 70.9% of the respondents were always practiced hand washing before and after each patient contact or performing any procedure.

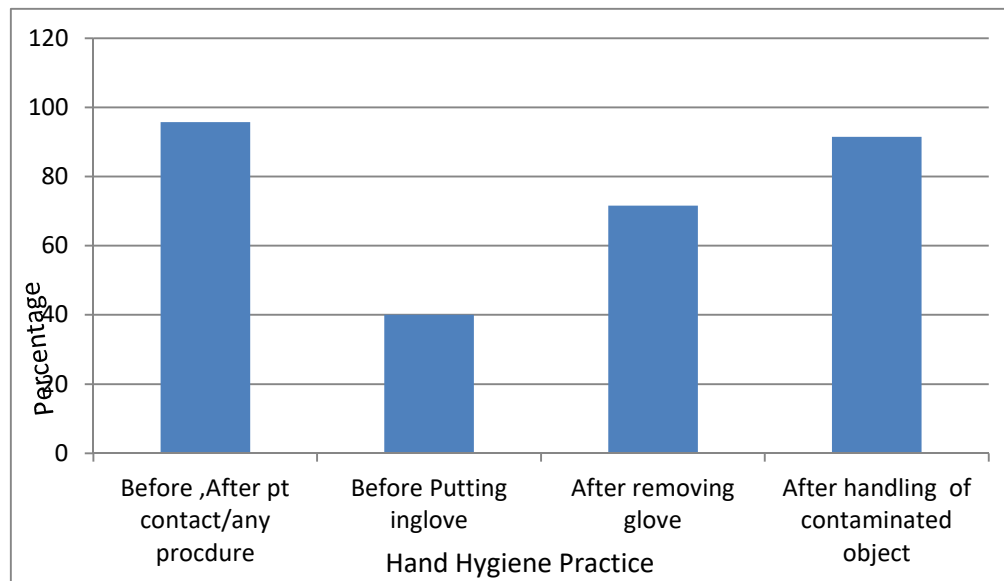


Figure 19: Hand hygiene practice among health professionals, who were working at public Health facilities in Shashemene Town Administration, Oromia, and January, 2018.

Regarding the use of personal protective equipment (PPE); Majority 131(92.9%) of the respondents were practicing applying personal protective while at work; among the study subjects 116 (82.3%) were used Gown, 81.3% were used Glove. Low proportions of respondents were used mask, head cover, eye protector boot/shoes and Apron due to the applicability depends on the case team or department in the health facilities, as indicated in table 3. Most of the respondents (80.1%) were not used appropriate PPE while at work according to the risk of exposure. Reasons for not to use appropriate PPE were 22.0% out of stock of the desired PPE, 53.9% always not necessary, 21.1% the difficulty to work with PPE. Fig4.

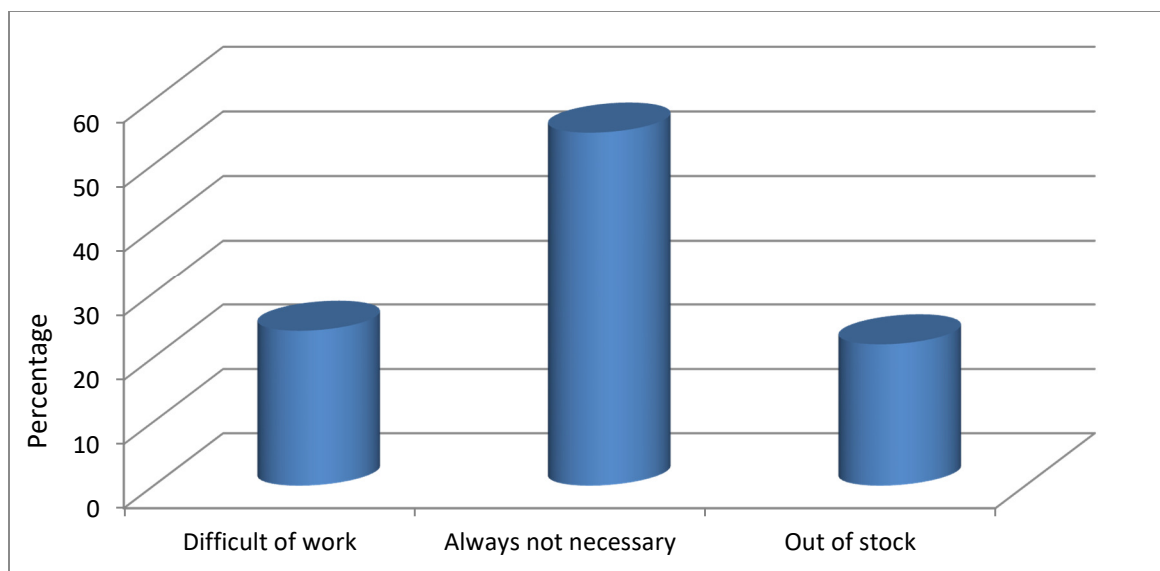


Figure 20: Reasons for not to use desired PPE among health professionals working at public health facilities of Shashemene town Administration, Oromia, January, 2018.

Regarding the reasons for not always practiced hand washing majority (60.3%) of the respondents was considering that it is not always necessary, 26.2% work load, and 13.5% were negligence. Figure5.

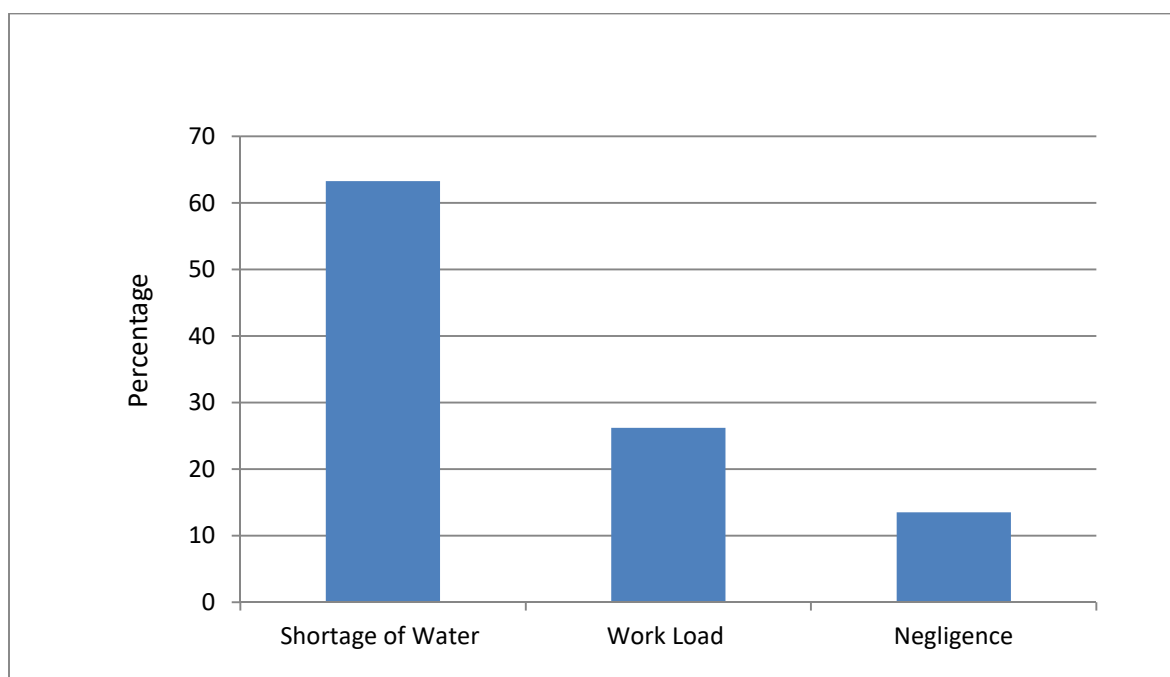


Figure 21: Reasons for not always hand hygiene practiced among health professionals working at public health facilities in Shashemene Town Administration, Oromia, and January, 2018.

As reported by the study subjects majority 119 (84.4%) of the respondents had immunized for hepatitis B this is due to mass immunization program held at this research area. Fig 6.

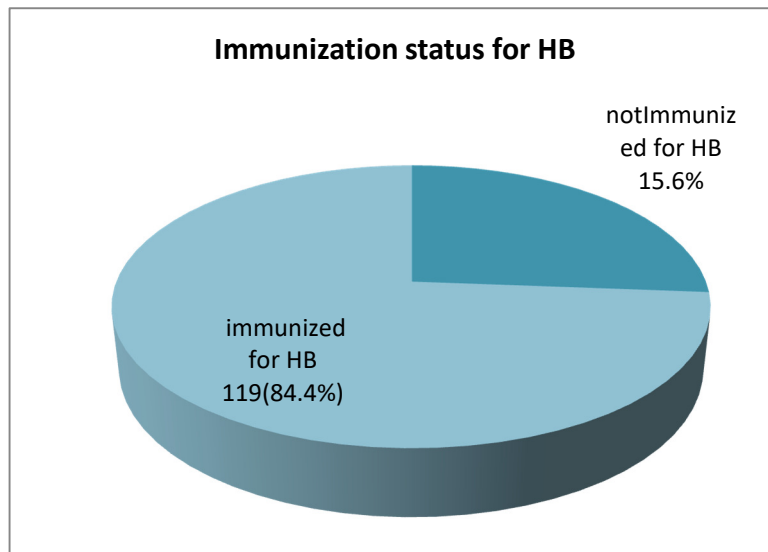


Figure 22: Immunization status of hepatitis B among health professionals working in public health facilities of Shashemene Town Administration, Oromia, and January 2018.

As reported by the study subjects more than half 42 (29.8%) of the respondents had ever exposed to either sharp or needle sticks injury, and 85(60.3%) of the respondents were exposed with blood or body fluid splash. Among the respondents 42(29.8%) had ever had sharp or needle stick injury, 14(33.3%) were during recap of needle, 18(42.9%) were during sudden movement of patients, 5(11.9%) were during sharp waste collection and 5(11.9%) were injured during suturing and sample taking from patients. Among those respondents who had sharp or needle stick injury, 27(64.3%) had one time, 15(35.7%) had two times, and 5(0%) had more than two times exposed to sharp/needle sticks injuries. Measure taken by respondents after had exposed to sharp or needle stick injury, blood and body fluid splash 48 (34. %) were washed with soap and water 22(15.6%) were washed with alcohol, iodine, or chlorine and 15 (10.6) had taken.

Among the respondents (109) 77.3% were disinfected and 94 (66%) sterilized medical equipments in their work room respectively. Furthermore 122(86.5%) of the respondents were collected wastes in separate and labeled containers as infectious and non-infectious wastes and 127(90.1) of the respondents were used safety box for sharp waste collection.

Determinant factors associated with practice of infection prevention

The associations between independent variables with practice of infection prevention of respondents were investigated using Bivariate and Multivariate logistic regression models. In Bivariate analysis variables that have the-value < 0.2 were entered into multivariate analysis to control the effect of confounder. In multivariate analysis; a variable having P-value < 0.05 was considered as statistically significant. Sex of respondent, training on infection prevention, and having water supply in the work room were found to be significantly associated with the practice of infection prevention at health facilities in the study area. During multivariate logistic regression analysis those variables showed statistically significant association with the outcome variables infection prevention practice were being Female sex (AOR= 3.6, 95%CI: 1.4, 8.7), being having immunization on infection prevention (AOR = 10.4, 95% CI: 2.0, 43), being wearing persona protective (AOR=6, 95%CI: 1, 35) and water supply in their work room (AOR = 4.7, 95% CI: 1.7, 12.9). No statically significantly association during multi variate association were with the practice of infection prevention were Availability of Safety Box (P.value = 0.016), IP practice (AOR = 0.27-1.7), IP guideline (AOR.6-5.9 = 0.400); at $p < 0.05$.

Table 20: Bivariate and Multivariate logistic regression of factors associated with practice of infection prevention among health professionals working at public health facilities of Shashemene Town Administration, Oromia, and January, 2018

Variable	Category	Good practice		COR(CI 95%,p.value)	AOR(CI95%,p.value)
		yes	no		
Sex	Female	75	12	.3(0.1-.6)* 0.001	3.9(1.5-10)* 0.003
	Male	11	43	1	
IP	Guideline	Yes	45	5	0.2(0.1-0.48)* 2(.6-5.9)

presence				<0.001	0.02
	No	43	48		
Hand washing practice	Yes	90	10	0.22(0.1-0.4) <0.001	3.5(1.4-8) 0.007
	No	16	25		
Availability of water supply	Yes	77	8	0.22(0.1-0.8) 0.001	4.7(1.7-12.9)* 0.002
	No	11	45		
Availability of safety box	Yes	123	4	0.15(0.03-0.7) 0.016	
	No	3	11		
Immunization status	Yes	107	12	4.7(1.3-15) 0.01	10.4(2-43)* <0.001
	No	8	4		
WEARING PERSONAL protective	Yes	122	9	7.3(1.5-36) 0.014	6(1-35)* 0.049
	no	6	4		
IP training	yes	52	11	2.4(1.1-5.1) 0.02	0.7(0.27-1.7)
	no	37	41		

6. Discussion

As the finding of this study revealed that 95.5% of the respondents had good practice of infection prevention. This proportion was higher than that of the study results from Nigeria reported 50.8% (16), from Addis Ababa on TBIC reported 48.6% (12), from Amhara Regional State Referral Hospitals Northwest Ethiopia reported 48.7% (11), and from Haramaya University, college of medical and health science reported 10.6% (13). However the observed proportion of my study finding on practice of infection prevention practice was almost similar with the study results reported from Palestinian hospitals which was 91.1% (17), but higher than from Northwest Ethiopia which was 63.2% (18). This discrepancy might be due to differences in the operational definition of good practice from study to study.

The findings of this study indicated 95.1% of the respondents were practiced hand hygiene after patient contact or any procedure, and 91.1% were practiced hand hygiene after each patient contact or any procedure. This observed result is consistent with WHO and national guideline recommendation. Hand hygiene is the single most important infection prevention procedure". Washing hands before and after any procedure is the most practical procedure for preventing cross-contamination (9, 10).

As the findings of this study showed wearing of PPE were the determinant factor of good practice of infection prevention those respondents who are using PPE 6 times more likely to have good practice of infection prevention than who were not used and about high proportions of respondents were used gown 116(82.6) and glove 96(68.1); however, low proportion of respondents were used mask (35) 24.8%, head cover 19(13.7%), eye protector or goggles 25(17.7%) %, apron 34 (24.11 %) and boot/shoes 28(20.3%). Majority 131 (92.9%) of the respondents were used full desired PPE while at work according to the risk of exposure, but this practical activities were not equal performed between health centers and hospital, even there were great differences among health departments within one health facilities, due to unavailability of desired personal protective equipment as reason out by study participants; This was not in line with WHO and national guidelines (9, 10).

WHO and national infection prevention guidelines indicates that using personal protective equipment provides physical barriers. It prevents micro- organisms from contaminating hands, eye, clothing, hair and shoes. PPE can reduce infection but does not provide complete protection against acquiring infection. It can be used effectively, correctly and at all time if splash or spills

of blood, body fluid, excretions and secretions are anticipated. It should be chosen according to the risk of exposure (9, 10).

Regarding Immunization status the finding of the study showed having vaccination of the respondents were the determinant factor of good practice of infection prevention. Those respondents who are using were about 10.4 times more likely to have good practice of infection prevention than who were not. Regarding for hepatitis B virus; the result of this study indicated 119 (84.4%) of the respondents were vaccinated against hepatitis B virus. This proportion was almost similar with that of study result from Palestinian hospitals reported 80.8 % (17). This similarity might be due to accessibility of vaccine in studied health facilities. The finding of this study was higher than that of a study conducted in Haramaya University, college of medical and health science reported 13.4% (13).

The finding of this study indicated improvement of proper infection prevention against hepatitis B virus in the studied health facilities.

Hepatitis B virus is one of the blood-borne pathogen transmitted through body substances (blood and body fluid). Immunization is the best way of preventing health professionals from this infection (10).

As the finding of this study showed less than half 42 (29.8%) of the respondents were exposed to either sharp or needle sticks injury, and 85 (60.3%) of the respondents were exposed to blood or/and body fluid splash respectively. This proportion was higher than that of the study from Gonder University, Northwest Ethiopia reported 33.8% of the respondents had ever exposed to blood, body fluids sharp or needle stick injury (20). Furthermore the finding of my study was higher than a study finding from Mizan-Aman hospital revealed 29.6% of the respondents had needle stick injury, 23.4% of the respondents had sharp injury, and 42.1% of the respondents had blood or body fluid splash (21). This discrepancy might be due to the differences on the level of awareness among study population.

Regarding waste collection; the finding of this study indicated 122 (86.5%) of the respondents were used separate and labeled containers for waste collection and 127 (90.1%) of the respondents were used safety box for sharp waste collection, 75.2% were located close to item used. This proportion was concurrent with national infection prevention guide line and WHO recommendation (9, 10). Health care facilities wastes may be infectious or non-infectious. Infectious or non-infectious wastes should be separated at generation point (9, 10). Separation of

wastes at generation point reduces the volume of infectious wastes and minimizes the health care facility cost for proper disposal of infectious wastes. At waste generation point the correct size and thickness of containers should be placed. For infectious wastes containers should be coded with yellow or red color (9).

As the finding of this study indicated less than half 63 (44.0%) of the respondents were participated on infection prevention training. This finding was higher than that of the study conducted in Addis Ababa public health facilities. This difference might be due to relatively high proportion of health professionals were received training on infection prevention in studied health facilities in the study area.

The observed result of this study on training of infection prevention was concurrent with the national and WHO guideline recommendation (9, 10). WHO and national guideline recommend in-service and ongoing training on infection prevention to equip health professionals with knowledge, attitude and practice towards infection prevention. Training enables health professionals to perform their duties safely. It helps them to anticipate infections and manage situation in which they may be exposed to infections such as, HIV/AIDS, HBV, and HCV (9, 10).

As the finding of this study showed sex of the respondents' were the determinant factor of good practice of infection prevention. Those respondents who are females were about 3.9 times more likely to have good practice of infection prevention than those respondents who are males. This finding was in corporate with the study from Amhara Regional State Referral Hospital, Northwest Ethiopia reported respondents those who are 30 years or older were about 2 times more likely to have good practice of surgical site infection prevention than those who are less than 30 years (11).

As the finding of this study revealed 73.8% of the respondents had water supply in their work room. Having water supply in the work room was significantly associated with the practice of infection prevention. Those respondents who had water supply in their work room were about 4.7 times more likely to have good practice of infection prevention than those respondents who had not water supply in their work room. This is consistent with the national guideline (9). National guideline recommend safe water supply in health care facilities.

The observed differences between these study findings from the findings of previously conducted studies in different health facilities in Ethiopia and abroad might be due to the

differences in the operational definitions of good practice, study methods, level of awareness of infection prevention among the studied population, study area and resource.

6 .Limitation of this study

- As this study did not include private health facilities and non health professionals like cleaners it may be difficult to generalize.
- The cross sectional nature of the study that did not include the qualitative data may mask the actual cause and effect relationship of health care related infection prevention practices with possible determinants in the study area.

7. Conclusion

The findings of this study revealed that the health professionals who were working at public Health facilities of Shashemene town administration during data collection period had relatively good practice of infection prevention towards it. Less than half of respondents 42 (29.8%) had ever exposed to either sharp or needle stick injury, and more than half of 85(60.3%) of the respondents had blood and body fluid splash and only 15 (10.6%) had taken post exposure prophylaxis (PEP) after injuries. About 119(84.4%) of the respondents were vaccinated against hepatitis B. Consequently we can say some of the study participants were at risk of acquiring infections such as HBV, HCV and HIV/AIDs from health facility.

In addition only 44.0% of the health professionals who were participated in the study had infection prevention practice before the study period. But as shown from the findings of this study being using PPE, having immunization status and availability of water supply on the infection prevention was significantly associated with the good practice of infection prevention among health professionals. Majority 104 (73.8%) of the respondents had water supply in their work room. Having water supply in the work room was also significantly associated with the good practice of infection prevention among the study subjects.

Recommendation

- All studied health facilities (Melika odda General Hospital, Abosto, Awasho, and Bulichana health centers) should avail immunization program consistently, a practice of health professionals towards infection prevention.

- Insure supplies of personal protective equipment and provide adequate training to health professionals about their proper use to the study facilities professionals.
- Afford hepatitis B vaccine and in place post exposure prophylaxis (PEP) service and improve utilization of PEP by those exposed to either sharp or needle sticks injury, blood or body fluid splash.
- All health facilities in the study area should avail safe water supply in the work room to make the infection prevention practice best.
- Health professionals who are working at the study areas of public health facilities should be oriented on using of personal protective equipment according to the risk of exposures and they should give attention to vaccinate for hepatitis B and protects themselves from acquiring HBV infection.
- Shasemene town administration health department should periodically conduct supportive supervision and monitor for the studied health facilities infection prevention practices. And it should follow appropriate intervention taken by the studied health facilities on the identified gaps based on findings of the study.
- Further study with larger scope that will consist of both quantitative and qualitative data from all health care providers of both public and private facilities is highly recommended for more generalizable findings on the factors associated with the practice of infection prevention among health professionals in Shashemene town administration and other parts of the country.

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Annex 4: data collection tool for thesis

Respondent ID No _____

Consent Form

Title:- Assessment practice towards infection prevention among health professional who are working at public health facilities in Shashemene town Administration ,Oromia ,Ethiopia, 2018.

Name of principal Investigator: - Temesgen Bekele

Name of Organization: - Saint Paul's Hospital Millennium Medical Collage of Public Health Department.

Name of Sponsor: - Saint Paul's Hospital Millennium Medical Collage.

Introduction: Hello, my name is.....I am a member of research team. Currently my group members working on research survey concerned with assessment of practice towards infection prevention among health professionals in Shashemene town Administration.

Purpose: To assess practice towards infection prevention among health professional who are working at public health facilities in Shashemene town Administration.

Procedure: If you agree to take part, this interview will take about 30 minutes of your time. I will ask you questions related to socio-demographic information, practice towards infection prevention.

Benefit: If you participate in this study, there may not be direct benefit to you. But your participation on this study has a greater input. Also this study will help to identify the gaps and to inform to the authorized stakeholder to take appropriate intervention.

Payment: You will not be provided any incentive or payment to participate in this study.

Harm: there is no harm to you from answering the questions.

Privacy: Your response is completely secret; your name will not write on the form

Confidentiality: The information you provide will never be used in connection with any other purpose. Only the investigators will have access to the data and only for investigation purpose. Your participation is voluntary and you will have the full right to withdraw from this study at

any time without restriction. You can choose not to respond to some or all questions if you do not want to give your response.

I would like to thank you in advance for your help. Are you willing to participate in this study? If yes, sign on the agreement form.

Participant Signature _____ Date _____

Name of persons obtaining consent _____ Signature _____

Name of Supervisor _____ Signature _____

Thank For Your Cooperation!

Interview Checklist

Interview Checklist

No.	Questions	Response	remark
1	Socio-Demographic Information		
1.1	Responder	ID _____ Case team/unit _____	
1.2	Address	Name of health facility _____	
1.3	Sex	1. Male 2. Female	
1.4	Age	_____ years.	
1.5	Religion	1. Orthodox 2. Muslim 3. Protestant	

		4.Other(specify)_____	
1.6	Ethnicity	1. Amhara 2.Oromo 3. Tigire 4.Wolayita 5. Sidama 6.other(specify): ____	
1.7	Educational Level	1.Diploma 2 1st.Degree 3.Masters in public health (MPH) 4.Specialist 5.Other(specify):_____	
1.8	Work experience(year of service)	_____year.	
1.9	Have you ever participated in infection prevention training?	1. Yes 2. No	If no, skip to Q 1.12
1.10	If yes, when did you participate in training last time?	1. Six month 2. One year 3. Two years and above	
1.11	Have you infection prevention guideline /manual	1.Yes 2. No	
1.12	Is there pipe water supply system in the room?	1. functional 2. not functional 3. no pipe water supply system in the	

		room	
1.13	If water supply system is not functional, is it water available by bucket/container in the room?	1. Yes 2. No	
2	Practice Related Question on Infection Prevention		
2.1	When do you wash/hygiene your hand?	1. Before and after each patient contact/any procedure? 2. Before putting in glove 3. After removing glove 4. After handling objects which might be contaminated 5. After contact with blood or body fluid 6. Other specify: _____	
2.2	Did you always wash your hand before and after each patient contact/any procedure?	1. Yes 2. No	If no, skip to Q 4.4
2.3	If yes, what material do you use to wash your hand?	1. Only water 2. Plain soap and water 3. Anti-microbial 4. Alcohol-based hand rub	

2.4	If no, why you didn't wash your hand?	1.Shortage of water supply 2.Work load 3.Negligence	
2.5	Do you use alcohol- based antisepsis?	1.Yes 2.No	
2.6	Do you wear personal protective equipment while at work?	1.Yes 2.No	If no, skip to Q 4.8
2.7	If yes, which one?	1.Gown 2.Glove 3.Head cover 4.Mask 5.Eye protector/goggle 6.Boots/shoes 7.Apron	
2.8	Why you do not wear full personal protective equipment according to the risk of exposure?	1.Difficulty to work with PPE 2. Not always necessary. 3. Out of stock	
2.9	Did you immunized for commonly communicable Hepatitis B Virus (HBV)acquiring through health facility	1.Yes 2.No	If no, skip to Q 2.11
		1. Vaccine not available	

2.10	If did not immunized, why?	2.Negligence	
2.11	Do you disinfect medical equipment in your case team?	1. Yes 2. No	If no, skip to Q 2.14
2.12	If yes, what chemical you use for disinfection?	1. chlorine 2. Saloon 3. Formaldehyde 4. Iodine 5. Alcohol 6. Other(specify):__	
2.13	Do you disinfect medical equipment in your case team?	1. Yes 2. No 3. Not applicable	If no, skip to Q 4.16
2.14	What sterilization technique do you use to sterilize equipments?	1.Boiling 2. Steam sterilization 3. Other specify	
2.15	Have you ever had sharp / needle stick injury?	1.Yes 2.No	If no, skip to Q 4.119
2.16	If yes, how?	1. During recap needle 2. By sudden movement of the patient 3. During sharp collection 4. Other(specify): _____	

2.17	How many times had have sharp / needle stick injury?	1.One times 2.Two times 3.More than two times	
2.18	Have you ever had blood or body fluid splash of patients through contact or unprotected skin?	1.Yes 2.No	
2.19	What measure did you taken after sharp or needle stick injury, blood or body fluid splash?	1.Washed with soap and water 2.Washed with alcohol, iodine or chlorine 3.Took Post exposure prophylaxis (PEP) 4.Other specify:_____	
2.20	Are medical wastes collecting containers separated and labeled as non-infectious and infectious wastes in the work room?	1. Yes 2. No	
2.21	Is there safety box for sharp waste collection in the work room?	1.yes 2. No 3. Not applicable	

2.22	If no, where are sharp wastes collected?	1. Puncture resistant container with cover. 2. Open bins 3. other(specify)_____	
2.23	Where do you put safety boxes?	1. In high traffic area 2. At corridor 3. Any where 4. located close to the area which the item is used	

Declaration: signed by both student and primary advisor

Declaration

I, the undersigned declare that this thesis is my original work in partial fulfillment of the requirement for the degree of Master of Public Health in Field Epidemiology. I also declare that it has never been presented in this or any other university and that all resources and materials used in the thesis have been duly acknowledged.

Student Name: Temesgen Bekeke

Signature_____

Place of submission SPHMMC Department of Public Health

Date of submission: _____

This thesis has been submitted with my approval as Collage/University advisor

Advisor name: Hailemichael Bizuneh

Signature_____

Date of submission: _____

Chapter VI Narrative Summary of Disaster Situation Visited.

6.1: Human Health and Nutrition Emergency Need Assessment Silit Zone of SNNP Region 2017.

Abstract

Among 23 teams established at Federal level for assessment, four of them were assigned in SNNP Region in selected ten zones. Our team was assigned in Silit Zones. These zones are among Fourteen (14) Zone, Four liyu Woreda and one Administrative city administered under SNNP Regional State and found in southeastern part of the country. This assessment is intended to investigate the extent, types, magnitude, severity and likelihood of different risks in the most “vulnerable” Woredas and develop response plan based on identified findings.

Visited woredas were selected by discussing with zonal Epidemic Preparedness Task Force and considering woredas those were selected by Regional DRMC. The same procedures were done at woreda levels to select visited kebeles, health facilities and villages. Following this, eight woredas (Hulbareg, Silitie and Sankura, Alichu, East Azernet, West Azernet, Lanfuro, Dalocha were assessed from February 20 to June 4, 2017. At each level interview and discussion were conducted with concerned bodies including community members by using prepared checklists. Additionally, review of documents was done at zonal and woreda levels.

Even though they did not have regular meeting there are functional multi-sectorial coordination forum at all Woreda levels. There was no ongoing outbreak in all the zones during assessment, there was no outbreak in the past six months. There were a shortage of emergency drugs and supplies at all visited woredas. There was good latrine coverage and utilization, poor coverage of drinking water in all visited woredas of the zones. Due to lack of drinking water in the coming six months, Scabies outbreak is anticipated to be re-emerged in some woredas.

Multi-sectorial coordination forum should be strengthened at all levels in Silit Zones. Medical supplies for emergency management should be adequately maintained at zonal, woredas and health facility levels.

1. Introduction

Disaster Risk Management is defined as the systematic process of using administrative and organizational directives, operational skills and capacities to implement strategies, policies and improved coping capacities in order to lessen the adverse impact of hazards (phenomena or substances that have the potential to cause disruption or damage to humans and their environment) and the possibility of disaster(6). In order to implement DRM, countries will require an enabling environment (policy and legislation; information and communication; training; research and funding). Certain capacities also need to be built, namely capacities for: coordination in the health and other sectors; risk assessment; making health facilities safer; minimizing the event impact (preparedness and response); post-disaster rebuilding of the health system (recovery); and strengthening local resilience (community support). The foregoing underscores the need to develop a regional strategy that comprehensively addresses DRM.

Disaster Risk Management (DRM) encompasses both Preparedness “the knowledge and capacities developed by health system and communities to effectively anticipate, respond to, and recover from, the impacts of likely, imminent or current hazard events or conditions” and Response “the provision of emergency services and public health assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected”. These two are covered by the 1997 strategy. In addition to these however, DRM encompasses an element of prevention by enhancing the ability of the health system, community or society exposed to hazard to resist or absorb the effects of a hazards through interventions based on risk analysis [1].

Humanitarian need assessment or community risk assessment is a participatory process for assessing hazards, vulnerabilities, risks, ability of the community to cope, preparing coping strategies and finally formulating a risk reduction options implementation plan by the local community and government also. Humanitarian need assessments use scientific information and predictions and participatory discussion to identify, analyze and evaluate risk environment of a particular community, reach on an agreement amongst the community on actions that are needed to manage the risks [2].

Good assessment practice is about having enough relevant information in order to make sound analysis and judgment. The data then informs decision-making in relation to four main questions: whether to intervene; the nature and scale of the intervention; prioritization and allocation of resource; and program design and planning. Formal needs assessments may also aim to force a decision by others, to influence the nature of others' decisions, or to verify or justify decision already taken. Humanitarian need assessment is a way of achieving a more consistent and accurate picture of the scale and nature of the problems people actually face in humanitarian crises, and how to ensure that decisions about response are properly informed by that understanding [2].

The government of Ethiopia has been conducting emergency health and nutrition assessment in the past years to address the emergency health and nutrition need of the country. The assessment is conducted twice in a year following harvesting seasons (Belg and Meher) and lead by National Disaster and Risk Management Commission (NDRMC) and Food Security Coordination Office in collaboration with MOH, MOW, NMA, NGOs and UN Agencies like (WHO, FAO, UNICEF and WFP) and in 2017 Belig assessment International Organization for Migration (IOM) was also participated to assess humanitarian need for internally displaced peoples (IDPs).

At the end of 2016, several food crises were triggered by extreme climate events due to the El Niño phenomenon. Severe droughts affected several countries in the Horn of Africa, southern Africa, eastern and southern Asia, South America, Central America and the Caribbean. During the 2016 summer period, drier-than-average conditions were also recorded in the Pacific Islands. Heavy rains and floods affected some areas of Southeast Asia and the Pacific Islands. The impact of the drought due to El Niño is forecast to continue throughout 2016, particularly in Southern Africa and in Southern and Central America. Countries of the Central American Dry Corridor (Honduras, Guatemala, Nicaragua, El Salvador) and Haiti and Cuba are among those most affected by drought in Central America and the Caribbean. A large part of southern Africa was hit by a severe drought at the beginning of the 2015-2016 crop seasons, which led to a state of emergency in several provinces of South Africa, in Zimbabwe and Lesotho. Malawi, Angola and Namibia were also badly affected, as were the southern parts of Mozambique and Madagascar [3].

According to this study result, over 10 million people faced critical food insecurity problems in horn of Africa. Food and nutrition security in the Horn of Africa are threatened by one of the strongest El Niño weather phenomena ever seen in the past 20 years. Over 15 million people in the region are food insecure, including about two million internally displaced persons (IDPs) and 1.7

million refugees. Among them, about 10.2 million and 3.2 million people are in need of emergency food assistance in Ethiopia and Somalia, respectively. Drier-than-average conditions are also affecting food security in Sudan, Eritrea, Somalia and eastern South Sudan. The March to September rains were the lowest (in 50 years in central and eastern Ethiopia [3].

Ethiopia, the second most populous country in Africa, has achieved impressive economic growth over the past decades. However, failed spring/*Belg* (mid-February-May 2016) rains compounded by the El Niño weather conditions that affected summer /*Kiremt*(June-October 2016) rains caused devastation on planting and livestock production across the country, and resulted in a severe drought. This created a major problem for agriculture, which generates about half of the country's income. The hardest-hit areas are Afar, the Sitti (Shinile) zone of the Somali region, Southern Tigray, Eastern Amhara, East of the Southern Nations, Nationalities and People's (SNNP) region, East and West Hararge, Arsi and West Arsi; and lower Bale zones of the Oromia regions. Pastures and water resources are also unusually low in the central and eastern Oromo region, and in the northern Tigray and Amhara woredas.

Food security situation

The El Niño-driven drought has greatly expanded food insecurity and malnutrition, and devastated livelihoods of the poorest and vulnerable people across the country, including those in areas such as Arsis and West Arsis Zones in the Oromia Region that normally produce a surplus. The government of Ethiopia has recently appealed to its international partners for emergency food assistance to feed 10.2 million people and for special nutritional programmes for more than 2.1 million, including 400,000 severely malnourished children. In addition, over 8 million vulnerable and food-insecure people receive support under the Productive Safety Net Program me (PSNP). According to UN reports, the number of people in need of emergency food assistance may reach 15 million by 2016. The number of areas in need of urgent humanitarian support (hotspot priority 1: IPC Phase 3 and above) have quadrupled from 40 woredas in February to 186 woredas in December 2015, reflecting the deteriorated humanitarian context.

According to OCHA (October – December reports), following drought-driven crop failure, market prices have already started to shift, with the price of food staples such as lentils 73% higher than at the same time last year (Addis Ababa, August 2015). By contrast, the price of livestock has fallen

by as much as 80% (northern Somali region, August 2015). As a result of these price changes, the purchasing power of drought-affected smallholder farmers is threatened as they can buy less and less with the money that they have.

Water shortages are affecting an important part of the population in the woredas that were affected by drought in 2015. According to the Humanitarian Requirement Document (Government of Ethiopia and Partners, December 2015), the 10.2 million food-insecure people are also affected by water shortages [3].

Nutrition security situation

The number of children with Severe Acute Malnutrition (SAM) admitted into therapeutic feeding programmes at national level in 2015 was higher than that of year 2014, and as of June 2015 the admissions were increasing every month, reaching 29 722 in April 2015.

The most affected regions are Oromia and the SNNPR, with Oromia accounting for 47% of the Community-Based Management of Acute Malnutrition (CMAM) admissions and SNNPR for 37%. As of June 2015, the trend of admissions was increasing in both regions. The most affected zones from the Oromia region are Arsi, Bale, Borena, East Hararghe, West Hararghe and West Arsi, while the most affected zones of the SNNPR are: Hawassa Zuria, Gedeo, Gurage, Hadiya, Kembata Tembaro, Segen Hizboch, Sidama, Silte and Halaba Special woreda [3].

Main factors in food and nutrition insecurity

Drought due to the poor Belg (first rainy season) and Meher (second and main rainy season) rains caused by El Niño, followed by crop failure and animal death, are the major factors contributing to food and nutrition insecurity in the country. El Niño also caused local flooding in some parts of the country. The events result in high staple food prices, but adversely affected livestock prices. The shortage of water also compromises the correct functioning of emergency and sustainable Water, Sanitation and Hygiene (WASH) services, resulting in outbreaks of water-borne diseases that further deteriorate the nutrition situation.

The influx of refugees from South Sudan and Somalia further fuelled the food insecurity situation in the country. Since the outbreak of violence in mid-December 2013, approximately 209,000 South Sudanese refugees have entered the country, bringing the total number of refugees and asylum seekers in Ethiopia to nearly 700,000. In addition, congestion in the Djibouti port, the main

entry point for goods into landlocked Ethiopia, is also slowing the timely distribution of food aid to beneficiaries [3].

2.Rationale of the assessment

Providing response on the basis of early warning and disaster assessment information enables resources allocated for response to be properly utilized for the intended purposes and, in the event of a disaster, to save lives and livelihoods by providing timely and appropriate response by properly identifying areas and people in need of emergency relief assistance. In addition, such an approach of provision of response allows to properly implementing recovery and rehabilitation interventions to help bring the affected population as well as social, infrastructure, and economic activities back to normal condition and build them back better as required to reduce future disaster risk [4].

Therefore being it is a national program in order to evaluate the production of the *Belig* and pastoral season and its impact on food and nutrition security and livelihoods in Ethiopia's cropping and pastoral areas, our team was deployed to Silite Zones;

- To identify *woredas* which as the result of the hazardinduced disasters 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
- To identify and anticipate any major outbreaks of human diseases and verify any data on malnutrition in order to compare it with 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.

3. Objectives

- ☐ To assess the extent, type, magnitude and likelihood of different risks in the most “vulnerable” woredas of Silite Zones during March 2017.
- ☐ To assess the existing capacity of the health system to handle those risks;
- ☐ To determine gaps in the capacity of the health system to knob anticipated/impending risks and existing threats.
- ☐ Based on the findings, to develop possible recommendation

4. Methods and Material

Nationally about 53 zones were selected to be assessed for any risk of food problem, human and animal health problem, shortage of water for human and livestock and other related factors by this Belig assessment. Again in SNNPR Regional State, eight zones were to be assessed for this Belig by four different teams. From selected zones, our team assigned to visit Silite zone SNNP Regional. This zones shared border with others as discussed above. . The team had ten members from different governmental and non-governmental organizations including UN agencies. We used the followed methods to collect necessary information based on our objectives.

- ✓ We made meeting with zonal preparedness and response taskforces and they presented summary of their zone current situation
- ✓ We selected woreda to be visited by the team based on their severity after brief report
- ✓ We used semi-structured questionnaire to collect the required information.
- ✓ We reviewed documents and reports from woredas and zonal health offices.
- ✓ We held meetings and discussions with selected woreda' preparedness and response taskforces, officials and program managers.
- ✓ We visited fields in selected woreda and kebeles to discuss with community and lower level government administrative bodies to verify data and information collected from zone and woredas.

4.1 Study Area and period

The study would be conducted in eight woreda, which is located in Siltie zone, Southern Nations Nationalities and People Regional State (SNNPR) in the North-East part of the region. It is located between 7 and 18 degrees north latitude and 12 and 38 degrees east longitude. It has 3,047.83 square Km area (2.75% of the regional area) and it shares regional boundary with Gurage zone in the north and west, with Halaba especial District in the south, with Hadiya zone in the south-west and shares national border with Oromia region in the east. Its capital city Worabe town is 175km and 150km far from Addis Ababa and Hawassa respectively. Siltie zone is composed of 8 administrative woredas and one town administration. There are 18 urban and 184 rural kebeles and majority (93%) of the population lives in rural areas. Regarding health facility there are 32 health centers, 194 health posts, 03 primary and 01 sp.comp.hospital which make the zonal health service coverage 94%. In addition there are 41 lower private clinic 21 Medium clinic, 41 drug store, 1 poly

clinic, 7 rural drug venders and 1 pharmacy serving the community. The study would be conducted from March 20- April 30, 2017 GC, in Silite zone, SNNPR, Ethiopia.

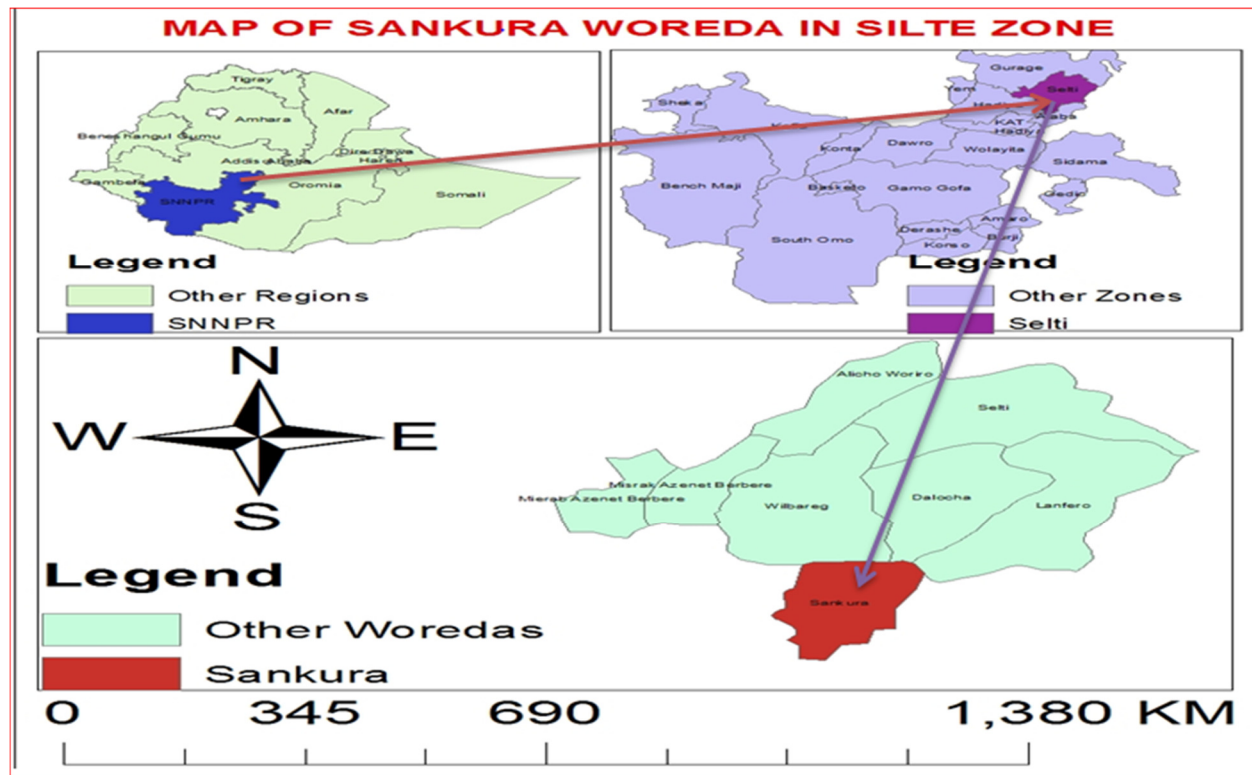


Figure 23: Map Siltie zone I Administration SNNPR 2017. G C

4.2 Study design

Cross-sectional descriptive study would be conducted for this study in, Siltie zone. Belig data flow from peripheral to national level would be evaluated. In addition, Tasks undertaken at different level would be assess at different level would be collected during assessment.

1. ALL the total woreda in the zone Is selected.

4.2.1 Data collection technique

I collected the data using semi-structured questionnaire, qualitative interview, and observation Of tools for Belig and secondary data review.

4.2.2 Data analysis

I entered and analyzed the data using the Microsoft Office Excel.

4.2.3 Data quality control

I cross checked the obtained data at different levels, zonal Health department, woreda health offices and health facilities before summarizing at each level for its accuracy and consistency.

4.3 Study subject

The study subject would be the selected woreda health office, Health centers, one hospital and Health post in selected woreda of Siltie zone, SNNPR region.

4.4 Data Collection Tools and Procedures

Semi-structured questionnaire, which was adopted from WHO standard questionnaire for surveillance system evaluation, would be used to collect data at all levels. Interviewing and observation of documents would be done by using this questionnaire. Different documents which existed at different level would be reviewed during data collection.

4.5 Data analysis tools

During entry and analysis of quantitative data, Microsoft Excel would be used.

4.6 Ethical issues

Permission would be obtained from Siltie Zonal Health Department to the woreda and from the woreda to the health facilities.

4.7 Data Dissemination

Written report (soft copies) would be prepared and shared to the visited woreda and Health facilities, Siltie zone health department and SPHMMC School of Public Health (academic advisers)

Table 21: Socio-demographic distribution of zones and woreda visited during Belig

Assessment March 2017 G.C

Zone/Woreda visited	Total Population	Under five children	Women 15-49 Years	Total Kebele	Hot spot kebele
Wulbareg	101,267	101,268	3504	14	13
E/Azerinet	67,860	28501.2	2348	18	5
Daloch	114,617	48139.2	3966	17	6
Sankura	107,567	45178.1	3722	31	75
Lanfaro	148,962	62564	515	27	11
W/ Azernet	75,783	31828.9	2622	19	6
Siliti	212,860	89401.2	7322	44	6
Alich					
Weraro	116,727	49025.3	4039	27	168
Total	921,679	455906	32,677	197	85

Table 25: Harvested and collected crops for support

S/R	Woreda	Collected crops in kuntal	Estimated in birr	Remark
1	Lanfuro	150	70000	
2	Dalocha	82.38	9992	
3	Sankura	22	0	
4	E/Azernet	0	0	

5	W/Azernet	38.5	0	
6	Silite	87	21299	
7	Hulbareg	38	61569	
8	Alicho	22	10267	
9	Worabe	5	0	
	Zone	439.88	173127	

Coordination

There was a functional multi-sectoral PHEM coordination forum in all of addressed woredas including zonal health departments. Also there were public health emergency preparedness plan in all visited zones and woredas but there was no budget in all assessed woredas. Even though there was no a contingency budget for emergencies at the woreda levels, cabinet discussed on the problems and allocated some budget form other program. There were forum among all addressed woredas, zonal health department, NGOs and UN agencies to respond timely whenever emergency occurs.

Top five Morbidities in visited zones and woredas

Top five diseases in Silte zone among adults were; Pneumonia, All Respiratory Tract Infection, Acute febrile illness (AFI), Diarrhea (non blood) and Malaria respectively. Whereas, top five diseases in under five OPD in Silite Zone were Pneumonia, Intestinal parasites, Diarrhea (non-bloody), Malaaria and Skin infection

Table 26. Top five causes of morbidity in under five children in visited woreda, from July to October 2017 G.C.

Zone	Woreda	Top Five causes of morbidity in under five years children				
		1	2	3	4	5
Silite	Wulibareg	ARTI	Pneumonia	Diarrhea	AFI	I/P
	E/Azernet	Malaria	AFI	Pneumonia	Diarrhea	AURTI
	Dalocha	Pneumonia	Diarrhea	URTI	Helminthiasis	AFI
	Sankura	Pneumonia	Diarrhea	Malaria	I/P	Malnutrition
	Lanfaro	AURTI	Diarrhea	Pneumonia	I/P	AOM
	W/Azernet	AWD	Malaria	Pneumonia	Skin Infection	I/P
	Silitie woreda	Malaria	Pneumonia	Diarrhea	I/P	Otitis Media

Table 27. Top five causes of morbidity in above five years in visited woreda of Silite Zones, from May to October 2016 G .C.

Zone	Woreda	Top Five causes of morbidity in above five years children				
		1	2	3	4	5
	Wulibareg	Pneumonia	Bronchitis	Gastritis	Malaria	Dysentery
	Alicho worero	pneumonia	AFI	Diarrhea	Trauma	I/PP
	E/Azernet	Helminthiasis	Malaria	UTI	Trauma	Dyspepsia
	Dalocha	Pneumonia	Dysentery	Dyspepsia	I/P	UTI
	Sankora	Pneumonia	RTI	Diarrhoea(non-bloody)	Typhoid Fever	Trauma
	Lanfaro	UTI	Dyspepsia	AFI	Skin Infection	Helminthiasis
	w/azernet	Gastritis	AURTI	Rheumatoid Arthritis	Bronchitis	STI
	Silitie	Malaria	Pneumonia	UTI	I/P	Dyspepsia

Cases and Deaths of major Epidemic prone diseases

During the past eight months, there were confirmed cases of Scabies outbreak in about five visited Woredas. Accordingly, In the Zone there were 980 cases and no death with case fatality rate (CFR) is 0. There was no Meningitis cases reported in all visited woredas. However, seven suspected Measles cases were reported. Totally about 1651(3.8) confirmed Malaria Cases were reported from visited woreda of the zones. Sankura woreda malaria cases increased by four folds. The case also shows an increment in silitie woredas. From the total confirmed malaria cases about 43% were PF and 57% Pv respectively, of Malaria cases reported from all woredas of the Silitie zone, because as data obtained from the Silite zone indicated, there were about 1686 confirmed Malaria cases reported to regional health bureau in the period of 8 months (July to February/2017). When we compared visited woredas

within their zones, Sunkura Woreda shared 90.5% the Zone; Hulbareg shared 52% followed by Werabe town).

Existence of Outbreaks

During this assessment epidemic prone diseases secondary to drought were assessed. Based on secondary data and information obtained from zonal health departments, woreda health offices, health facilities and community during field visit there were no other outbreak except Scabies. There was a scabies outbreak in all the five Woredas during eight months. Totally about 890 scabies cases were reported.

Preparedness and Availability of Drugs and Medical Supplies

Shortage of emergency drugs and supplies was a major problem at all the eight woreda. According to the finding of this assessment all the eight woreda faced a shortage of Anti-Malaria drugs, AWD Kits, Oily CAF, ORS, Clinical Delivery Assistance kit PART A and B and nutritional supplies. Mainly in Sankura, Hulbareg, Siltie, Dalocha, Lanfuro woredas, this problem were identified as very critical. In visited woredas of Siltie Zone, drugs and other medical supplies that were supplied by Pharmaceuticals Fund and Supply Agency (PFSA) did not coincide with the need woredas.

Table 28. Requirement, availability and gaps of drugs and medical supplies in Silite Zone, SNNPR, June 2017.

Drugs and Medical Supplies		Unit	Total Requirement	Available	Gaps
Drugs	Coartem all types	Box	300	0	300
	Artesunate Rectal	Strip	500	0	500
	Artesunate Injection	Vial	200	0	200
	Quinine 300mg tab	Box	5	0	5
	Chloroquine 250mg tab	Tin	4	0	4
	Ceftriaxone 1gm inj.	Vial	3600	0	3600
	Oily CAF 1gm inj	Vial	1000	0	1000
	Doxycycline 100mg cap	Box	600	0	600

Drugs and Medical Supplies		Unit	Total Requirement	Available	Gaps
	Ringer Lactate soln	Bag	10,000	0	10,000
	ORS	CTN	50	0	50
	Vitamin A	Tin	500	0	500
Nutrition Supplies	F100	CTN	100	9	91
	F75	CTN	150	10	140
	RUTF	CTN	4200	0	4200
	Resomal	Box	500	0	500
	Amoxicillin 125mg/5ml suspension	Bottle	200	0	200
	Amoxicillin 250mg dispersible tablet	Tin	50	0	50
	Ampicillin 500mg inj	Vial	500	0	500
	Mebendazole 100mg tab	Tin	100	0	100
Laboratory Supplies	RDT (Malaria)	Test	9000	0	9000
	LP Set	Pack	50	0	50
Medical Supplies	Disposable Glove	Box	100	0	100
	Disposable Syringe	Box	150	0	150

Table 29: Requirement,availability and gaps of drugs and medical supplies in Silite Zone, SNNPR, and June 2017.

Drugs and Medical Supplies		Unit	Total Requirement	Available	Gaps
Drugs	Coartem all types	Box	172	11	161
	Artesunate Rectal	Strip	0	0	0
	Artesunate Injection	Vial	2903	200	2703
	Quinine 300mg tab	Box	19	0	19
	Chloroquine 250mg tab	Tin	116	33	83
	Ceftriaxone 1gm inj.	Vial	8943	0	8943
	Oily CAF 1gm inj	Vial	4065	0	4065
	Doxycycline 100mg cap	Box	82	20	62
	Ringer Lactate soln	Bag	4,088	750	3,258
	ORS	Sachet	13,627	0	13,627
	Vitamin A	Tin	258	0	258
Nutrition Supplies	F100	CTN	510	8	502
	F75	CTN	523	18	505
	RUTF	CTN	5,260	900	4,360
	Resomal	Box	32	0	32
	Amoxicillin 125mg/5ml suspension	Bottle	6,388	0	6,388
	Amoxicillin 250mg dispersible tablet	Tin	2,144	101	2,043
	Ampicillin 500mg inj	Vial	100	0	100
	Mebendazole 100mg tab	Tin	319	102	217
Laboratory Supplies	RDT (Malaria)	Test	15,969	150	15,819
	LP Set	Pack	6	0	6
	Pastorex (Meningitis)	Test	44	0	44
	Tran-Isolate (TI) Bottle	Each	15	0	15
Medical	Disposable Glove	Box	1,980	200	1780

Drugs and Medical Supplies		Unit	Total Requirement	Available	Gaps
Supplies	Disposable Syringe	Box	92	0	92
	CTC Kit	Each	15	10	5
	PPE	Each	260	30	230
	Individual Clean Delivery Kits	Each	44	0	44

There was no data that showed requirement, availability and gaps of drugs and medical supplies in Silte Zone during this assessment. And we discussed with head of zonal health department and PHEM focal person at presence of zonal administrative and they agreed to assess their store and report it as soon as possible.

Table 30: Availability of Adequate emergency drugs and supplies for one month in visited Woredas of Silite Zone,, SNNP Region, June 2017 G.C

Drugs and Medical Supplies	Is it adequate for the coming one month (Yes/No)								
	SILITE ZONE								
	Silite	Lanfaro	Dalocha	Sankura	Hulbareg	A/wuraro	w/azernet	E/Azernet Silitie	
Ringer Lactate (to treat AWD cases)	No	No	Yes	Yes	No	No	Yes	No	
ORS (to treat AWD cases):	No	No	Yes	Yes	No	No	No	Yes	
Doxycycline (to treat AWD cases):	No	No	Yes	No	No	No	Yes	No	
Consumables : Syringes,	No	No	Yes	No	No	No	Yes	No	
Gloves (for	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	

Drugs and Medical Supplies	Is it adequate for the coming one month (Yes/No)								
	SILITE ZONE								
	Silite	Lanfaro	Dalocha	Sankura	Hulbareg	A/wuraro	w/azernet	E/Azernet Silitie	
Emergence management):									
Amoxil susp (measles)	No	No	Yes	No	No	No	No	No	
Tetracycline ointment (measles)	No	No	Yes	yes	No	No	No	Yes	
Vit. A (measles)	No	Yes	Yes	No	No	No	No	No	
Coartem for Malaria	No	Yes	Yes	Yes	No	No	Yes	Yes	
Artesunate (rectal) for Malaria	No	No	No	No	No	No	No	No	
Artesunate (Injection) for Malaria	No	No	No	No	No	No	No	No	
Artemether IM for Malaria	No	No	No	No	No	No	No	No	
Quinine (PO) for Malaria A/wuraro	No	No	No	No	No	No	No	No	
Chloroquine for Malaria	No	No	No	No	No	No	No	Yes	
Ceftriaxone	No	No	No	No	No	No	No	No	

Drugs and Medical Supplies	Is it adequate for the coming one month (Yes/No)								
	SILITE ZONE								
	Silite	Lanfaro	Dalocha	Sankura	Hulbareg	A/wuraro	w/azernet	E/Azernet Silitie	
(Meningitis)									
RDT for Malaria	No	Yes	Yes	Yes	No	No	Yes	Yes	
RDT (Pastorex) for Meningitis	No	No	No	No	No	No	No	No	
LP set	No	No	No	No	No	No	No	No	
Number of CTC kit available: (for AWD)	No	No	No	No	No	No	No	NO	
Clinical Delivery Assistance kit PART A: Reusable Equipment	No	No	No	No	No	No	No	NO	
Clinical Delivery Assistance kit PART B: Drugs & Disposable	No	No	No	No	No	No	No	No	

Risk Factors

Malaria

Malaria cases were decreasing in all visited woreda of the Silite zone when compared with the same period of last year that is 43,406(28%) cases were being seen at OPD level in the last 8 months of this 43,406(28%) seen by RDT& microscope from this 1651(3.8%) became positives and 35 seen clinical total 1686 treated. From 1651 this 912(55.2%) and 739 (44.8%) were Male and Female respectively and 700(43%) PF and 879(53%) PV repectivly. More than 90% kebeles of visited woredas in all the silite zone were malarious areas ,the case of malaria In Silite Zone, were decreased by421(20.3%) however in Sankura woreda the case was increased 4 folds and the case was increasing in Hulbareg and werobe woredas also,from this 18% were diagnosed at health post of this 39% were at Silitie woreda. In Summary those who came to the health facility with fever 28% were diagnosed as Malaria and 3.8% only possetive. There fore this indicate that where no epidemic the number of cases were 30-40 % which less from the target this shows malaria was decreasing. About 133 kebeles consisting 11707 populations were living in malarious area and there were malaria breeding sites in the zone, due to this they conducted environmental management activities towards prevention and control seasonal mosquito breeding. Long lasting insecticides treated bed nets (LLITs) coverage of Silite Zone was 79% and in 2009 EFY they conducted Indoor Residual Spray (IRS) to 91% coverage in which about 99,481 people were protected. Similarly, .

Table 31. Percentage reduction of Malaria Cases in visited woreda Silitie Zones, SNNPR in similar period (May-October) 2015 and 2016 G.C

Woreda	2016	2017	Difference	Diffirence(%)
Dalocha	450	513	63	
SANKURA	118	470	352	
Silitie	280	277	3	
Hulibareg	230	196	34	
Lanfuro	75	72	3	
E/Azernet	47	52	5	
Total	1200	1580	460	

Meningitis

During the last three years, there was no Meningitis epidemic in all the eight assessed woreda. In Silite Zone, Meningitis vaccination was not conducted for 1-29 years old peoples during 1-30/9/2009 EFY. There were no data showed Meningitis vaccination coverage for the Specific woreda in the Silite Zone.

Measles

There was no measles outbreak in the Silite zone during the last six months July to march 2017GC. Measles vaccination coverage of Silite Zone was 93% and 100% respectively. Even though Measles vaccination coverage data was not found in most visited woredas during this assessment, Silite, from Hulibareg and Sankura of Silite Zone were 96% each. In all visited woredas of the zone, measles guideline is distributed for all health facilities and there were trained health workers on measles management. Supplementary Immunization Activities (SIA) was conducted in all assessed zones 21-28 April 2017 G.C. Due to poor cold chain system management and less availability of functional refrigerators at health post level, Silte Zone had fear of measles outbreak in some woreda.

Challenges in Responding Epidemics

During epidemic management, shortage of transportation and emergency drugs are main challenges that faced many woreda of the Silite zones. Lack of budget and logistics were others challenge of woreda in epidemic control activities. Particularly in some woreda coordination among sectarian teams was poor; there was critical shortage of emergency drugs, safe drinking water, water treatment chemicals and operational cost.

Nutrition

As data obtained from the assessment area showed, there was no unusual trend of malnutrition in all the eight woredas. However, OTP and third round CHD screening data indicate that there are still cases of malnutrition in most of visited woredas. This year, SAM cases were decreased in woredas of Silite Zone Compared to similar period of last year; whereas increased SAM admission in many woredas of Silite Zone especially from March to May then after it seems decrement after September but their screening coverage was low compared to previous months. Poor dietary habit of the community and low income sources due to decreased products of livestock, were contributed for SAM increment in Lanfero woreda. In the coming months, cases of malnutrition are expected to be increased in many woredas of all the woredas due to milk reduction and significant loss of crop production secondary to drought.

Table 32. Percentage of SAM cases in visited Woreda of Silte zone

woreda	2 years	july		august		sep		oct		nev		dec		Jau		Feb	
		Participation	Global underweight	Participation	Global	Participation	Global underweight	Participation rate	Global underweight	Participation rate	Global underweight	Participation rate	Global underweight	Participation rate	Global	Participation	Global underweight
Alicho	5840	87	0.2	82	0.2	85	0.4	84	0.3	86	0.1	85	0.6	91	0.5	94	3
Dalocha	5417	100	4.6	100	5.2	92	7.1	102	5.3	83	3.3	96	4.9	100	6.7	92	1
Hulbareg	5207	107	1.7	96	1.3	96	0.9	98	0.8	95	1.3	94	2.3	97	1.9	84	4
Lanfuro	6619	89	6.1	91	6.7	90	6.2	79	2.9	90	6.8	87	7.2	90	6	100	2
Sankura	5358	96	2.9	90	3.8	98	2.8	98	2.9	102	2.9	102	2.8	102	4	97	2
Siltie	10455	104	5.0	100	4.0	109	5.9	103	4.8	102	4.3	99	4	102	3	94	3
Total	38896	98	3.7	94	3.7	97	4	95	3.2	94	3.4	81	4.4	98	3.6	92	2.9

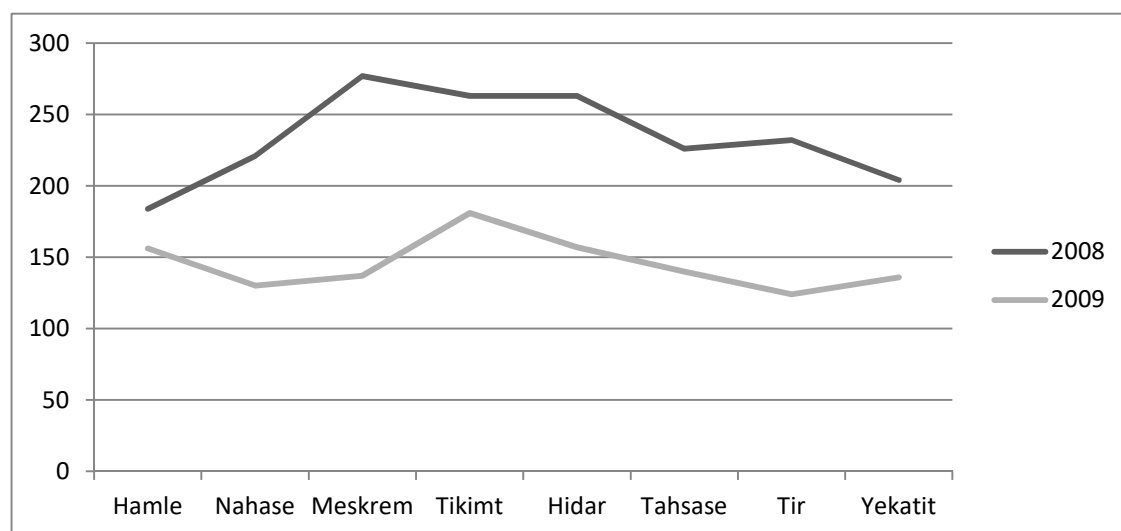
In the woreda were the SEVER ACUTY MALNUTRITION (SAM) extensively happend ,the magnamente of SAM were given in 145 health postes by extension workers ;moro ver about 19 health facilitéis like hospitales, health centers stabilization center(Sc) were estabilished and the ñangamente ser vice were given for admitid children. There fore in this 2009E.C F.Y budget of eight months about 1161 SAM children were admitid and treated as in patient 263 as out patient respectively. From this who have gotten the ser vice about 1266(91%) were cured From SAM.Targeting CHD in all woreda screening of mal nutrition done fore children 6 months to 59 months. The plan was 129854 children and achieved averagly about 122602(94%). From this children about 1161 were SAM and 2267 were treated as moderete respectively.On the second round of CHD there was aplan to give vita mine A suplementarían and D-worming. The children that targeted for vita mine A was34% and achieved 33.3% respectively.

Table 33.Silte Zone eight months New admission of OTP report in 2008 Vs 2009per district

Silte Zone OTP new admission trend by year

Months	Lanfur o		Dalocha		Silti		Hulbarag		Sank ura		Wora be HC		Alichio		WAB		EAB		ZONAL		
	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	2008 E.C	2009	
July	33	30	48	25	44	36	36	27	23	80	30	3		3		10		2	184	156	
Aug	37	28	60	28	80	35	38	8	21	50	40	4		2		0		0	221	130	
Sep	45	21	52	23	11	56	29	18	31	41	31	3		0		0		2	277	137	
Oct	39	24	34	27	55	75	18	28		26	22	2			2		0		2	263	181
Nove	57	12	43	20	67	88	49	21	41	91	44	2		4		0		1	263	157	
Dec	35	10	37	21	87	56	18	23	48	17	44	2	1	3	0	1	1	3	226	140	
Jan	41	9	73	29	15	34	33	24	48	15	08	2	0	4	2	2	2	2	232	124	
Feb	59	29	60	25	15	34	19	12	48	28	38	2	2	1	1	3	0	1	204	136	

Table. 34. Trends of SAM 8 months among 2008 vs. 2009



Conclusion

There was a functional multi-sectoral coordination forum in all assessed zone and woreda. However they are not meeting regularly except few woreda. All assessed woreda has their own public health emergency preparedness and response plan but not budget allocated except the zone. Malaria, measles, AWD and meningitis were the main anticipated risk in the visited woreda. During Jun to October outbreak were not reported in any of assessed woreda. On the other hand many of assessed woreda have enough emergency drug and supplies for 1 month except the zone. Adequate therapeutic supplies RUTF, F100 and F75 available in all assessed therapeutic centers.

Recommendations

Disease control and prevention activities for major epidemic-prone diseases (measles, malaria, AWD and meningitis) should be strengthening. Zonal and woreda level EPRPs should be supported by budget. In addition, minimum emergency drugs and supplies should be available at zone and woreda level stock for preparation and timely response.

Annex 5: Regional/ZonalLevelQuestioner

Interviewer name_____		Institution:_____	
Interview Date:(dd) _____/(mm) _____/2013		Region:_____	
		Zone:_____	
Main contact at this location:	Name: _____	Position:_____	Tel:_____
	—		
1. COORDINATION			
A. Is there a functional multisectoral coordination forum for the health sector? Yes ☐			
No ☐			
B. Are all relevant government, NGOs and UN agencies represented? Yes ☐			
No ☐			
C. Frequency of regular meeting? (Weekly, Every 2 weeks, monthly.....)			
2. Outbreak? Yes ☐			
No ☐			
Was there any outbreak in the last 3 months? YES		NO _____	
If yes, specify the type of disease _____			
Type of outbreak _____	_____	Number of cases	Deaths _____
(specify the time period) _____			
If yes, specify the type of disease, _____, _____			
Type of outbreak _____	Number of cases Deaths (specify the time period) _____		
Type of outbreak _____	Number of cases Deaths (specify the time period) _____		
Type of outbreak _____	Number of cases Deaths (specify the time period) _____		

3. Mention anticipated epidemics , If yes please indicate Zone/Woreda at risk and risk population per anticipated risk: (Use the

4. Public Health emergency Management					
A. Is there a Public Health Emergency Preparedness and Response plan?		Yes ☐ No ☐			
If yes, is the plan budgeted/ funded?		Yes ☐ No ☐			
B. Is there a trained staff on PHEM (Regional/Zonal/Woreda/HFs) the last 2 year		Yes ☐ No ☐			
If yes specify number of trained personnel					
C. Is there a Regional trained Rapid Response team (RRT)?		Yes ☐ No ☐			
D. Is there stock of: (Use the Stock estimation matrix to estimate the amount of stock for each drug/supply for 6 months)	Drugs and medical supplies		Total requirement	Available	Gap
	i. Meningitis vaccine				
	ii. Drugs:	Coartem			
		Oily CAF			
		Doxycycline			
		Ringer lactate			
		ORS			
		Amoxil suspension			
		Cotrimoxazole suspension			
		Tetracycline Ointment			
Vit A.					
iii. Lab	RDT (Malaria)				

	supplies	Pastorex (Meningitis)			
--	----------	--------------------------	--	--	--

		LPset			
		TIbottle			
	CTC Kit(AWD)				
	Medical Supplies	Gloves,			
		Syringe			
		PPE			
	Others(specify)				

Annex7:WoredaLevelQuestioner

Interviewer name _____ Institution: _____ Region: _____

Zone: Woreda _____

Interview Date: (dd) / (mm) _____ / 2013

Main contact at this location: Name: _____ Position: _____ Tel: _____

SECTION I: SOCIO-DEMOGRAPHIC PROFILE				
1.1. Woreda total	M:F: _____		Under 5 _____	Total: _____
1.2. Special Population (if any):	Pastorals _____	Refugees _____	IDPs _____	Migrant Workers _____
SECTION II: HEALTH PROFILE				
2.1. Coordination				
Is there a multisectoral PHEM coordination forum?				Yes ☐ No ☐

Chapter VII – Abstract for Scientific

7.1: Evaluation of Dysentery Surveillance System in Oromia Region, Ethiopia, 2017

Author: Temesgen B.

Address: Shashemene Town Health Office

Background: Blood diarrhea (dysentery) is an acute infectious enteritis of human disease caused by bacteria of genus *Shigellae*. It is among the top causes of death in children less than 5 years of age in African countries including Ethiopia. We evaluated the bacillary dysentery surveillance system in East Shoa zone, Oromia region to determine whether the system meeting set objectives and to assess its attributes.

Method: A cross-sectional descriptive study design was conducted from 1-12 May 2016. East Shoa zone study units, ten woreda health offices were selected. We used Center for Disease Control updated guidelines for public health surveillance system evaluation.

Result: We found the regional reporting rate for the last five years were Zone 87%. We observed poorly acceptable and analyzing of surveillance data for action, and donor dependent surveillance system. But, it was useful, simple, flexible and acceptable at all level.

Conclusion: The surveillance system of dysentery is useful to detect outbreaks and to estimate the magnitude of morbidity and mortality of the disease in the area. The system is simple and flexible but poorly accepted. We recommend the reporting rate, feedback system, government funding for sustainability, data analysis and quality should be improved.

Key words: Surveillance, System Evaluation, Bacillary dysentery, East Shoa, Ethiopia, 2016

Epidemiological Bulletin, Week 12, 2017G.C

High lights of the week

The zonal surveillance report completeness rate by health facilities was 100% at week 12 of 2017.

The number of malaria cases slightly increases in Dalocha district but decreasing in other district.

The numbers of epidemic thypus is increasing in alichowariiro , silti and sankura when compared with other weeks.

No reported cases of AFP and measles cases in this week.

1. Introduction

The bulletin serves to summarize weekly surveillance data performance of Silte ZHD/PHEM on epidemic prone diseases and other public health emergency. It comprises Completeness, timeliness and reporting trend of priory diseases and response activities. It also provides feed back surveillance activities for week 12, 2017G.C.

1. Weekly Surveillance Report

Report Completeness and timeliness of all woreda health facilities were 100% and 100%respectively.

Timeliness:In week 12, the zonal surveillance timeliness rate is 100% which is above WHO minimum requirement.

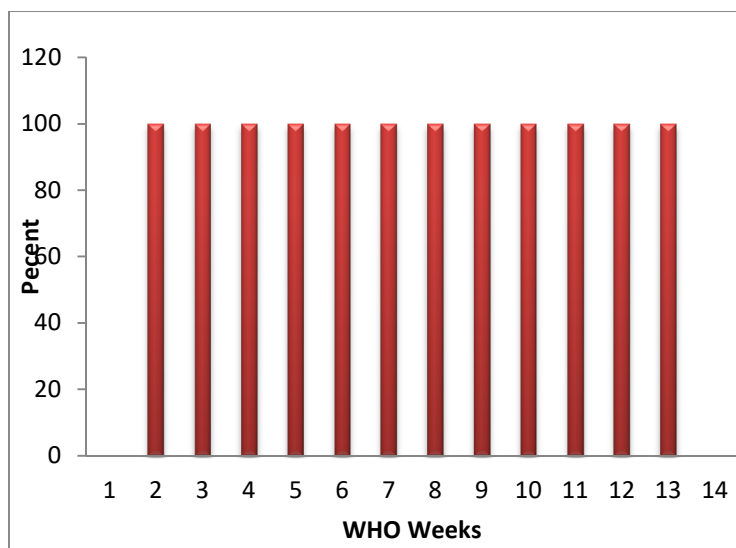
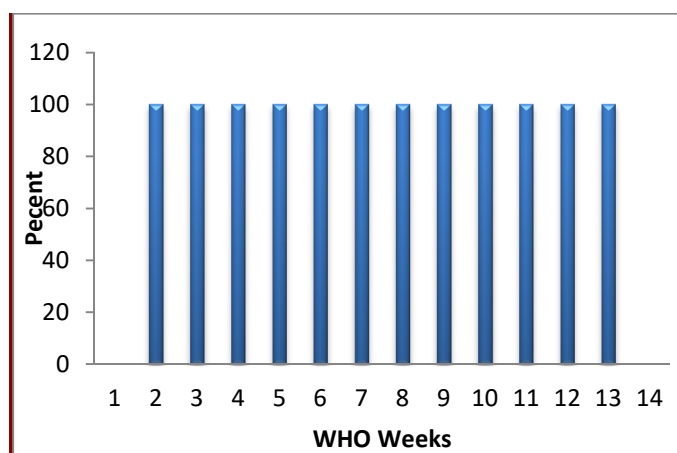


Fig 27Figure 24: **Weekly PHEM** report completeness by woredas, Siltie, week **12, March 2017 G.C**

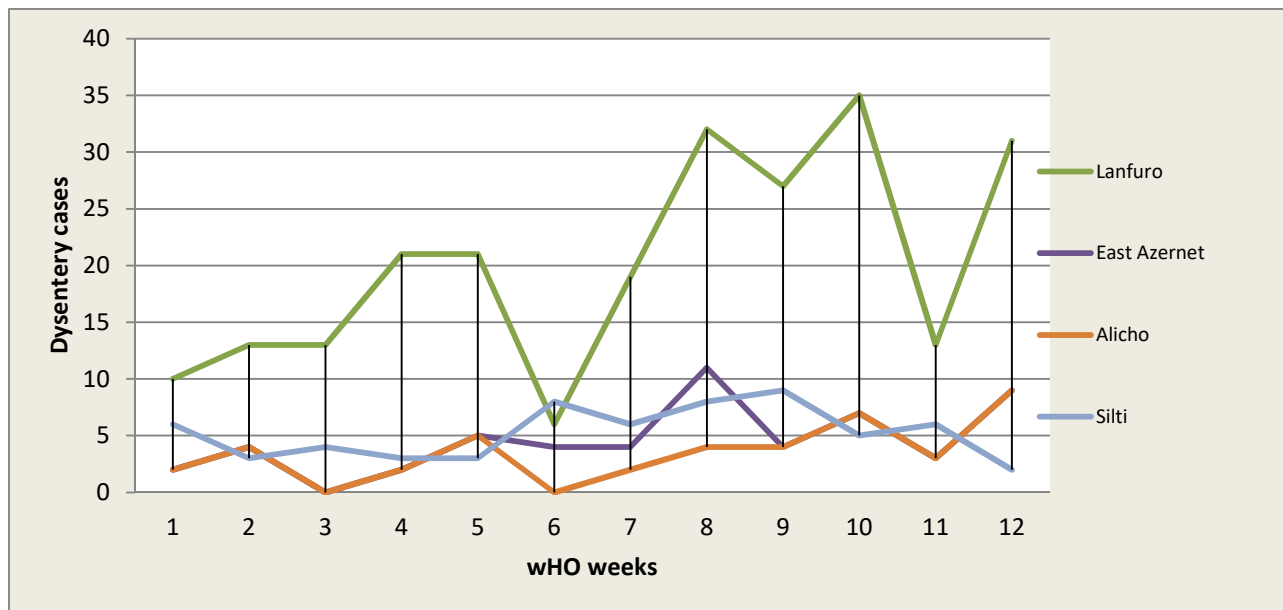
.Completeness;In week 12, the Zonal surveillance completeness rate is 100% which is above WHO minimum requirement.Fig 28.



. Diseases Condition Dysentery

In week 12 a total of 79 cases of dysentery were reported from eight weredas of the zone. The high number of Dysentery cases were reported from Lanfuro woreda health office (31), East Azernet woreda health office (11), Alichu wariro woreda health office (9) and Silte woreda health office (7) are those contributes high number of dysentery cases compared to other

woredas in week 12 of WHO. In lanfuro woreda the dysentery cases increased as compared to week 11 which was 13cases of dysentery. Fig 29



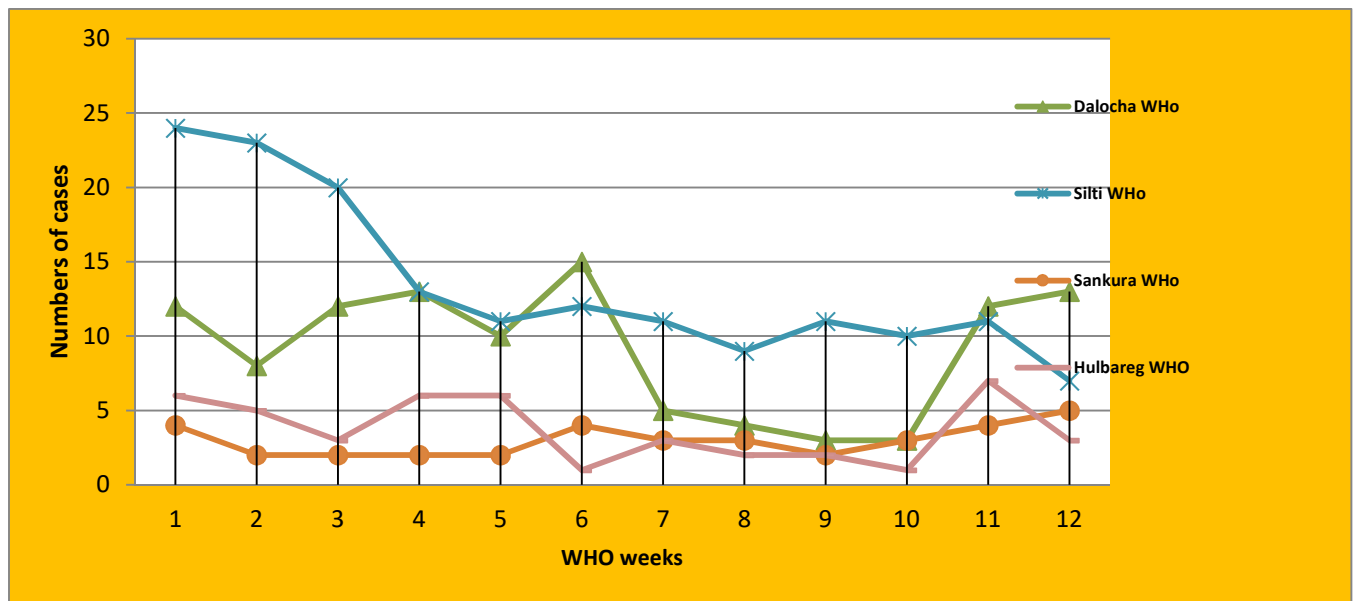
The trend of Dysentery cases in four selected woreda health office.

The Dysentery cases are high in Lanfuro woreda when compared to other woredas in twelve weeks. So the woreda health office should alert the health facilities to assess the risk factor and gives attention to dysentery. Data collection, analysis and follow up should be done at the woreda health office by surveillance focal person.

2. Malaria

In this week (12) a total of 1132 malaria suspected fever cases examined by RDT or microscope were reported and 34 clinical and confirmed malaria cases yielding a positive rate of 3% were reported from 8 weredas of the zone. Among the total clinical and confirmed malaria cases 14 (41%) of them were confirmed cases for p. falciparum and 20(59%) were positive for P. vivax. Confirmed malaria cases were decreased by 7 (1.4%) cases as compared to week 11. A total of 925 were tested, yielding appositive rate of 4.4% or 41 cases were positive. The high number of confirmed malaria cases was reported from woreds Dalocha woreda health office (12) followed by Silti woreda health office (7) ,Sankura woreda health office (5) and Hulbareg woreda health office (3) are those contribute for highest number of malaria case when compared with other woredas of the same week .

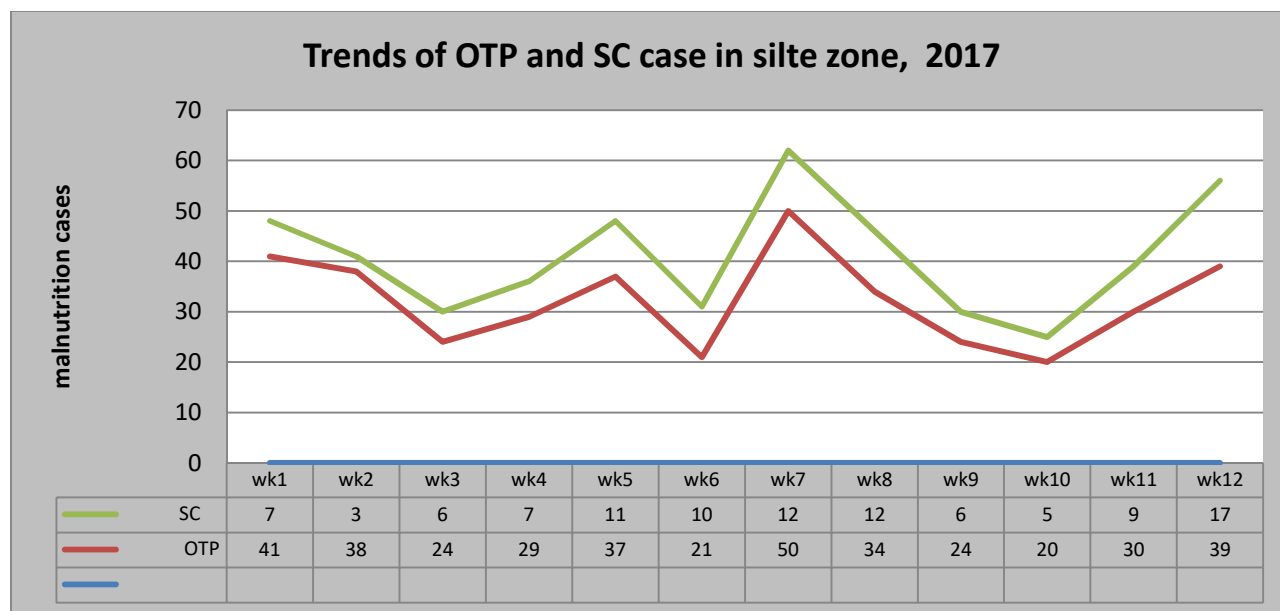
Trends of malaria cases of the twelve consecutive WHO weeks for some selected woredas.Fig 30



3. Malnutrition

In this week (12) a total of 56 cases of malnutrition were reported from eight woredas of the Zone. The malnutrition cases were increased by 0.9% as compared to week 11. Of the total case 17 (30%) of them were treated at stabilization center. **There was one death** in this week. The majority of cases were reported from Silti woreda health office (14), Dalocha woreda health office (13), Hulbareg woreda health office (8) and Lanfuro woreda health office (10).

Trends of SAM cases in past twelve consecutive weeks in Silte zone.Fig.31



4. Others

In week twelve there were no report cases of AFP, Measles, Meningococcal Meningitis, Rabies, Anthrax, Relapsing fever and maternal death.

5. Response Activities

- Based on weekly surveillance report, feed- back is given to all woreda.
- Daily follow-up of rumors of epidemic prone diseases and other public health emergencies are followed regularly.
- Supportive supervision is done to strengthen the surveillance activities at all weredas and selected health facilities.
- Guinea-worm diseases control, prevention and eradication program will be strengthen so as to make Ethiopia GWD free country and get certified.

Declaration

I, the undersigned, declare that this is my original work and has never been presented by another person in this or any other University and that all the source materials and references used for this thesis have been duly acknowledged.

Name: TemesgenBekeleZegeye

Signature: _____

Place: Shashemene Health Office

Date ofSubmission: 23/2017Feb

The thesis has been submitted for examination with my approval as a university advisor.

Name of advisor: _____

Signature: _____

Date: _____

