



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

**Ethiopian Field Epidemiology Training Program
(EFETP)**

Compiled Body of Works in Field Epidemiology

By

Ibrahim Hussein Ali (BSC)

**Submitted to the School of Graduate Studies of Addis Ababa University in
partial fulfillment for the degree of Master of Public Health in Field
Epidemiology**

May, 2016

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Acknowledgment

On behalf of my works, my gratitude goes to my mentors (Dr Negussie D and Dr Lucy B), who achieved their successful mentorship responsibility. I would like to thank MOH, AAU, EPHA and CDC who may able me to have a knowledge and skill with their successful coordination and scientific management of the program. My specials thank goes to the Afar regional state, which made me a candidate for this special program. Finally, I would like to thank to all TRHB, PHEM staffs for their kindly supports and sharing their experience.

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List of Acronyms and Abbreviation

AAUSPH	Addis Ababa University School Of Public Health
AFI	Acute Febrile Illness
AIDS	Acquired Immune Deficiency Syndrome
ANC	Antenatal Care
AR	Attack Rate
ART	Anti Retroviral Therapy
AURI	Acute upper respiratory infection
BCG	Bacillus Calmette Guerin
BSC	Bachelor of Science
CAR	Contraceptive Acceptance Rate
CDC	Center For Disease Control
CI	Confidence Interval
CHD	Community Health Days
CU5	Children Under Five Years of Age
DRMFSS	Disaster Risk Management and Food Security Sector
EFETP	Ethiopian Field Epidemiology Training Program
EFY	Ethiopian Fiscal Year
EPHA	Ethiopian Public Health Association
EPHI	Ethiopian Public Health Institute
EPI	Expanded Program Of Immunization
FAO	Food And Agricultural Organization
FMOH	Federal Ministry of Health
FP	Family Planning
HABP	High Availably Business Partner
HC	Health Center
HEW	Health Extension Worker
HF	Health Facilities
HIV	Human Immune Deficiency Viruses

HMIS	Health Management Information System
HO	Health Officer
HP	Health Post
HR	Human Resource
IMR	Infant Mortality Rate
IRS	Indoor Residual Spray
LBRF	Louse Born Relapsing Fever
LLITN	Long lasting Impregnated treated net
MDG	Millennium Development Goal
NGO	Non-Governmental Organization
NMCP	National Malaria Control Program
NTD	Neglected Tropical Disease
OPD	Outpatient Patient Department
OTP	Outpatient Therapeutic Feeding Programme
PF	Plasmodium falciparum
PHEM	Public Health Emergency Management
PIHCT	Provided Initiative Counseling and Test
PLWHA	People leaving with HIV/AIDS
PV	Plasmodium vivax
RDT	Rapid Diagnostic Test
RTI	Respiratory tract infection
SARI	Sever Acute Respiratory Illness
TB	Tuberculosis
TBA	Traditional Birth Attendant
TFP	Therapeutic Feeding Programme
TTBA	Trained Traditionally Birth Attendant
UN	United Nations
URTI	Upper Respiratory Tract Infection
USA	United States Of America
VCT	Voluntary Counseling And Test
WASH	Water, Sanitation and Hygiene
WFP	World Food Program
WHO	World Health Organization

Executive Summery

This document contains a two year output of Field Epidemiology Training Program that to be submitted to Addis Ababa University for the final accomplishment of master degree in Field Epidemiology. The majority of the program (75%) contains field works that known as residency. This document includes the two year outputs including diseases outbreak investigations, public health surveillance data analysis, surveillance system evaluation, narrative summary of disaster situation report, manuscripts, abstracts, and training reports. During residency I have tried to work my best in my field work including office works as well as field works in controlling outbreaks, and emergency response and investigation activities. The two years activities are summarized in to nine chapters.

Chapter one contains disease outbreak investigation. I conducted two outbreak investigations as first author. Both were investigated using case control study design based the outbreak investigation format (Abstract, background, methods and materials, results, and discussion). The first outbreak investigation was about LBRF outbreak Mekele Town, Tigray that occurred on February, 2016. The second outbreak investigation was conducted on scabies outbreak occurred in Doga- Tembien district of south east Tigray.

Chapter two included about two year kalazar data analysis in Tigray since 2012 to 2014. It shows the trend of kalazar in years, zones and the morbidity incidence as zonal and regional

Chapter three addresses surveillance system evaluation of malaria, in Wekro district. The evaluation based on the standard system evaluation attributes of simplicity, flexibility, stability, acceptability, representativeness, timeliness, data quality, sensitivity and predictive positive value.

Chapter four elaborates assessment of health profile Dubti district, Afar. Health and health related activities, different sectors data, major challenges and special condition in the woreda were assessed in this wereda. Recommendation and gaps were forward in order to help the planners and the health sectors.

Chapter five using the Vancouver Group style manuscript is stated for peer reviewed journals and it is prepared on the Louse born relapsing fever outbreak investigation.

Chapter six included two abstracts on Louse Born Relapsing Fever (LBRF) outbreak investigation and scabies outbreak investigation. None of these were accepted and presented in any conference or organization.

Chapter seven indicates about the disaster narrative situation of the Belgi (Sugum) assessment of eight wereda of Awsa Afar zone (three Wereda), three wereda of the south (Gabbi) Zone Afar and two wereda of Awsa zone of Afar. Health and health related like outbreaks, nutrition, Water, Sanitation and Hygiene as well as preparedness of the district was documented.

In chapter eight one protocol for Owner Ship and Utilization of ITNs in Dubti, Afar project were included. These protocols were about the community Owner Ship and Utilization of ITNs in Dubti, in acquiring malaria. The project was developed based on finding during district health profile.

Finally Epidemiological bulletin of Tigray regional health Beuro was included in the last chapter.

Chapter I- Outbreak/Epidemic Investigation

1.1 Louse Born Relapsing Fever Outbreak Investigation in Mekele-City, Mekele Zone, Tigray Regional State, 2016

Abstract

Background: Louse- borne relapsing fever (LBRF) is an acute febrile illness caused by *Borrelia recurrentis* and is transmitted by body lice, (*Pediculus humanus corporis*). In February, 2016 a LBRF outbreak was reported from Mekele and we investigated the outbreak to confirm it, identify risk factors, and implement public health control measures.

Methods: Controls were chosen by individual matching to cases on age group, and sex (1:2, or 21 cases and 42 controls) to control confounding factors; investigation was conducted from 8th-25th, February 2016. All cases 21(100%) were reported from Mekele and a predesigned questionnaire was used for data collection. Data were checked for completeness, coded and analyzed using SPSS version 21. $P < 0.05$ was considered significant for comparison.

Results: We identified a total of 21 LBRF cases and no deaths (CFR=0.0%) Mean age of 16.9- year [ranging: 15 - 20-year]. All cases 21(100%) were males street or homeless people with overall AR=8/100,000 Population. Multivariate analysis showed that more than six people sleeping to gather or mass sleeping [Adjusted Odds Ratio [(AOR) =15.9, 95% CI (4.793_60.155)] with P-value 0.002 were independent risk factors for LBRF among streets or homeless males in Mekele city.

Conclusions:-In Mekele, LBRF is still an important health problem. Poor personal hygiene among street, overcrowding (close contact), not taking bath and lack of alternative clothes might contribute to increase the magnitude of the outbreak. Therefore, health education should be delivered towards LBRF prevention in the city.

Introduction

Relapsing fever (RF) is a vector borne disease caused by *Borrelia* species (body lice in case of louse-borne relapsing fever (LBRF)) and soft ticks in case of tick-borne relapsing fever (TBRF). This acute febrile illness presents with recurrence of characteristic febrile periods lasting for days alternating with afebrile periods [1]. The main manifestation is a recurring fever which coincides with massive numbers of bacteria in the blood and severity ranges from asymptomatic to fatal [2,3]. Louse-borne relapsing fever has been restricted to countries with poor socio economic status, the most important foci being Burundi, Rwanda and Ethiopia. *Borrelia recurrentis* is the etiologic agent for louse-borne relapsing fever and occurs as epidemic under conditions of overcrowding, poverty, draught and famine. Homeless people in crowded shelters are also at risk of louse born relapsing fever [4, 5]. Large outbreaks of louse-borne relapsing fever had occurred throughout the past century. These outbreaks usually occur following man-made break downs in public health, as typified by the epidemic following World War II that involved about 10 million cases and one million deaths during this epidemic [4]. Currently, epidemic relapsing fever is found only in Ethiopia and neighboring countries, although its occurrence among homeless people of industrialized European cities has been suspected but not confirmed. Famine, war, and the movement and groups of refugees often result in epidemics of louse born relapsing fever [6, 7]. Ethiopia is main endemic focus of louse borne relapsing fever. It was reported as seventh of the top ten leading causes of admission and death among adults in the country, in 2002/03. More than 9000 cases were reported to the ministry of health in the same year. However, lack of diagnostic facilities in rural health set up and incomplete reporting make it difficult to estimate total number of cases[4,8]. Several large epidemics were recorded in the country, usually following war and famine. Localized epidemics continue to occur when circumstances become favorable. The latest epidemic occurred in 1991/92, at the end of the civil war in Ethiopia. It occurred among military recruits returning to their residence areas, and later spread to different sections of the community, including schools. Among 389 patients from Arsi, southern Ethiopia, during this epidemic, the case fatality rate was 3.5 % [4]. Infestation was more frequent in high lands where people bath and wash clothes less frequently, and uses more bedding. A more recent study of prevalence of lice infestation among school children showed that 66.8% of the students harboured body lice. The prevalence was significantly higher in Debre-Berhan, 76.4%, at an altitude of 2850 meters, compared to Gambella, 60.3%, located at an altitude of 485 meters above sea level. In urban areas, the disease occurs mainly among jobless migrants, daily labourers, prisoners and the poor [4].

Objectives

General objective

To confirm existing of outbreak, identify risk factors, and implement public health control measures, in Mekele, Tigray Region in February, 2016.

Specific objectives

- To verify the existence of louse born relapsing fever outbreak in the district
- To characterize louse born relapsing fever outbreak in terms of person, place and time in Mekele
- To identify factors contributing to the occurrence of louse born relapsing fever outbreak
- To assess the prevention and control interventions to louse born relapsing fever

Methods

Study area

The outbreak investigation was conducted in Mekele started on 8-24 Feb, 2016. Mekele City Administratively divided in to seven sub cities. There is one referral hospital; four general hospitals and seven health centers Mekele city has projected total population of 267, 350 for 2015/16.

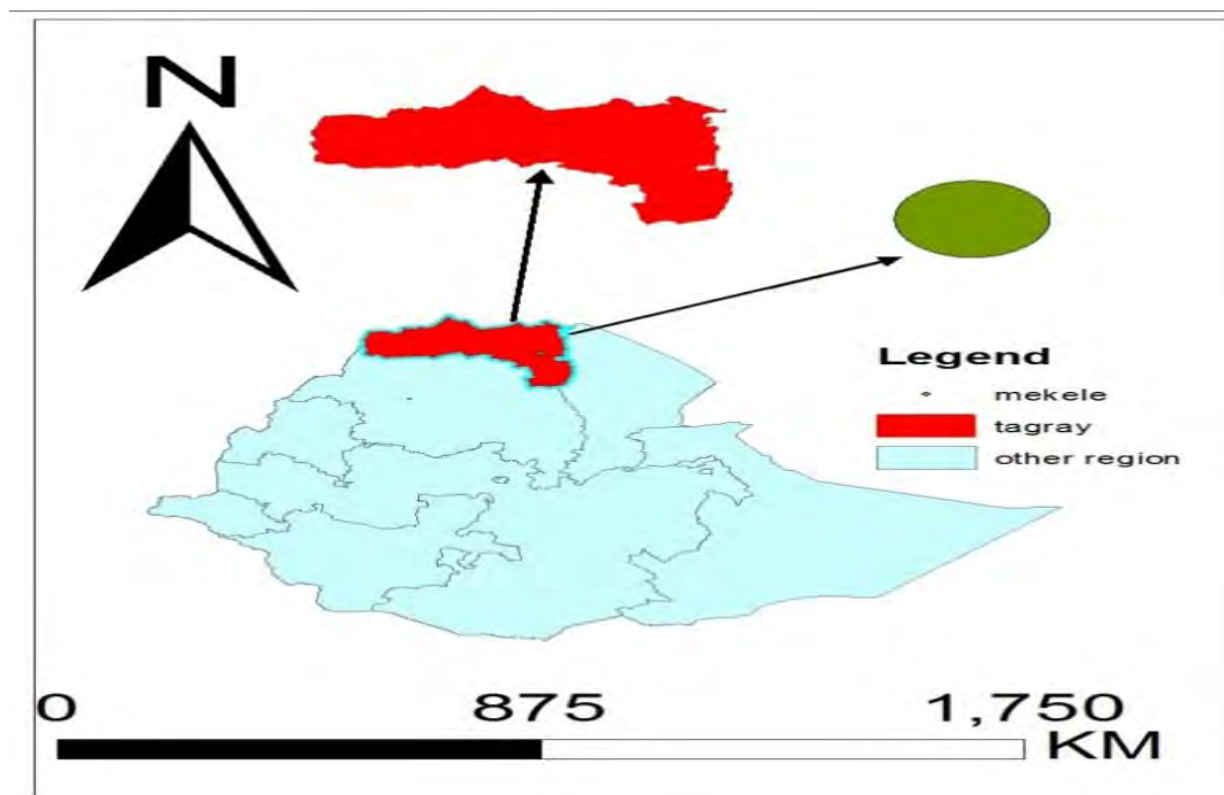


Figure 1.1 1.map of Mekele-city, Mekele zone Tigray, February, 2016

Study design and period

Matched/ individual matching case –control investigation was conducted twenty one cases matched with forty two controls that had no previous history of relapsing fever living in the same village as the cases.

Line list of cases was taken and followed daily within the study period or 8th -25th February, 2016, cases and controls interviewed using semi-structured questionnaire, their sleeping spaces were observed and all information(mass sleeping, homeless people, not changing cloths etc) hypothesized as risk factors for the relapsing fever outbreak was collected.

Sample size:

Matched (individually) case control study with 1:2 ratios, where 21 cases and 42 controls were used. Cases and controls were matched by age, and sex to control the effect of confounding variables that could distort the true association between the exposure and the outcome.

Source and study population

Target population of the investigation was all patients with louse born relapsing fever cases /death come to health facilities and fulfills the case definition/confirmed cases of louse born relapsing fever in affected kebeles of Mekele.

Data collection

Data was collected with line list, observation of sleeping space and case management; and purposively selected Surveillance focal person and community leader interview at all levels and discussion on health seeking behavior with community. Cases were defined using WHO standard louse born relapsing fever case definition, for analytic analysis 21 LBRF cases and 42 controls (case to control ratio of 1:2) were interviewed using standard questionnaire that includes; socio-demographic, Knowledge to disease, exposure, and risk factors were included. Active case search was conducted, and mass screening of BF was done. Discussion were conducted with the Zonal Health Office, District Health Office, district health personnel, teachers, community members, and the district administrative cabinet both prior and exit of the investigation.

Case Definitions

Suspected case:-Any person presented with an abrupt onset of rigors with fever, usually remittent, headache, arthralgia and myalgia, dry cough, epistaxis.

Confirmed case:-suspected cases with demonstration of *Borrelia recurrentis* in peripheral blood film.

Epidemiologically linked case: -Is a suspected case, which has contacts (possibly got *B.recurrentis*) with laboratory confirmed case or another epidemiologically confirmed case.

Index case:-Suspected or confirmed louse born relapsing fever case (case that met the criteria for standard louse born relapsing fever case definition) that initiates the public health attention (may or may not visit health facility) and of course, the first case who possibly the source of infection for the other cases emerging.

Data processing and analysis

The data were entered and analyzed using SPSS version 21, and Epi Info Version 7.1.3.0. Results were presented using descriptive table, chart and spot map. Attack rate, P-value and 95% confidence interval (CI) for odds ratio (OR) were used in deciding the significance of the associations.

Data quality control

We used case based and line listing for describing louse born relapsing cases in terms of time, place and person. However, all data were checked for completeness before entry and cleaned before analysis.

Inclusion criteria

Cases:- Any resident of Mekele who tested positive for *B.recurrentus* and/or epidemiologically linked to laboratory confirmed cases and had symptoms of louse born relapsing fever within study period and who agreed to participate in the study was included.

Control: - A control was any resident of residents during the study period who was a neighbor to a case and who did not develop signs and symptoms of LBRF and agreed to participate was included.

Exclusion criteria

Cases: - Those cases that refused to participate or were not conscious and family members in the same household were excluded

Controls: - Those who refused to participate were excluded as well as family members from same household.

Ethical issues

A support letter was obtained from Tigray Regional Health Bureau and as this was an emergency epidemic investigation conducted as part of public health intervention, no ethical approval was obtained and Oral informed consent was obtained from participants or from their parents to participate in the study. Confidentiality was assured and no personal details were recorded or produced in this documentation.

Results

Laboratory result

Eight case blood samples were tested and positive for louse born relapsing fever *B.recurrentus*. Hence, based on previous zero report of LBRF and the laboratory result typical louse born relapsing fever

clinical manifestation and epidemiologically linked with laboratory confirmed cases, and the outbreak was confirmed and cases were treated as LBRF.

Descriptive Epidemiology

We identified a total of 21 LBRF cases and no deaths (CFR=0.0%) from 8th -24 February, 2016. Mean age of 16.9- year and median 17-year [ranging: 15 - 20-year]. All total cases 21(100%) were males. All cases 21(100%) were age 15-20 year and were reported from 09Kebele with an Attack Rate of 8 cases per 100000 population. An overall AR=8/100,000 Population.

Descriptions of scabies cases by time

Index case:-The index case was seen in kedamy-weyane on 08-Feb- 2016. The case was a 16-old male (who's 7 other members of his friends got sick at different time and 7 of confirmed cases were in this group) who have no a travel history out of his village. He later come to Mekele health center, treated with porous antibiotics and cured.

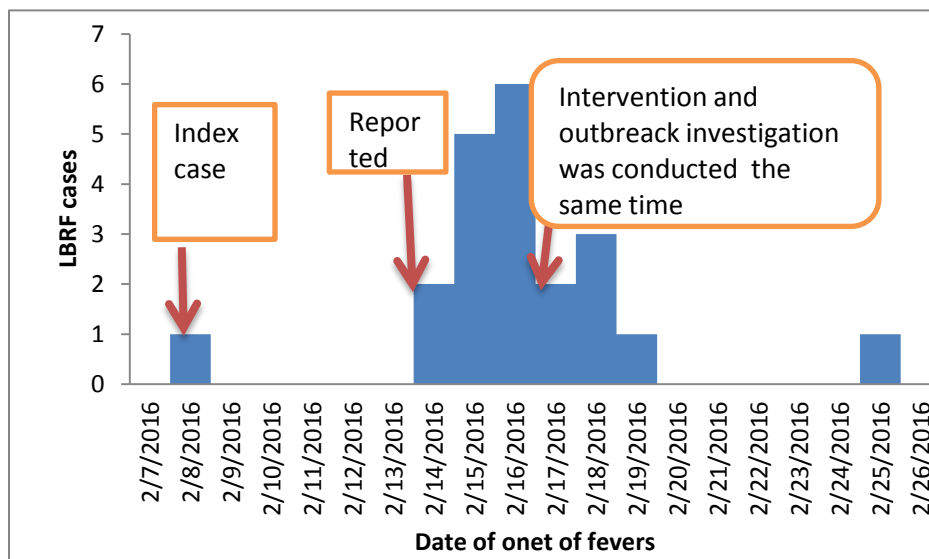


Figure 1.1.2. Epicurve based on date of onset of fever Mekele-city Tigray, 8th -25th February, 2016

Analytic Epidemiology

A total of 21 LBRF cases and 42 apparently healthy controls were included into this study. Participants were matched by; age and sex. All of 21(100%) cases and 42(100%) controls were male with the minimum age 15 and maximum 20 years old and mean age of respondents was 16.9 years and their median age was 17 years (SD 1.46); orthodox and Tigray in ethnic; 52.38% (11) cases and 14.29 % (6) controls were illiterate, 38.1% (8) cases and 30.95 % (13) controls were primary , 9.52% (2) cases and 54.76 % (8) controls were secondary and above in education status. From total confirmed cases 100%

(21), 80.95 % (17), 71.43% (15) and 19.05% (4) presented with fever, head ache, chills and vomiting respectively.

Table 1.1.1 socio demographic and educational level of study participants Mekele Tigray February, 2016

Variables		case status				Total
		Case		Control		
Sex	Male	21	33.3%	42	66.7%	63 100%
	Female					
Age group(year)	15-20	21	33.3%	42	66.7%	63 100%
Educational level	Illiterate	11	52.4%	6	14.3%	17 27.0%
	Primary	8	38.1%	13	31.0%	21 33.3%
	secondary and above	2	9.5%	23	54.8%	25 39.7%

Bivariate logistic regression analysis of respondents of the study 66.7% (14) patients and 11.9% (5) controls were more than six people sleeping together (OR=14, 95%CI [4.025_54.416], Not taking bath weekly (OR=13.6, 95%CI [3.836_48.211], Contact with LBRF ill person (OR=10.6, 95%CI [3.135_36.005], did not wash their clothes at least weekly (OR = 8.5, 95% CI [2.586_27.947] , Not changing cloths at night (OR=6.2, 95% CI [1.960_19.928] and p-value 0.000) and the associations were statistically significant. The likelihood of acquiring relapsing fever for those slept more than six were fourteen times, not taking body bath at least weekly was about thirteen times, not washing clothes at least weekly was about eight times and that of not changing cloths at night was six times higher compared to those slept less than six, taking bath, washing clothes at least weekly and changing cloths at night.

Table 1.1. 2 Factors associated with LBRF identified by univariate analysis of participants February, 2016

Risk factor	Cases				Control				OR	95%CI
	Yes	%	No	%	Yes	%	No	%		
More than 6 people or mass sleeping together	14	66.7	7	33.3	5	11.9	37	88.1	14*	4.025_54.416
Not taking bath at least weekly	37	76.2	5	23.8	8	19	34	81	13*	3.836_48.211
Contact with LBRF ill person	36	71.4	6	28.6	8	19	34	81	10*	3.135_36.005
Not washing clothes at least weekly	35	66.7	7	33.30	8	19	34	81	8.*	2.586_27.947
Not changing cloths at night	36	71.4	6	28.6	12	28.6	30	71.4	6.*	1.960_19.928

* Significant

Multivariate analysis of mass sleeping (AOR = 15.9, 95% CI [4.793-60.155]) showed a statistically significant association. The likelihood of acquiring relapsing fever for those who were sleeping more than six was about sixteen times that those who were sleeping less than six person in a room.

Table 1.1. 3 Factors significantly associated with LBRF identified by multivariate analysis, February 2016

Independent risk factor	P_Value or Sig.	AOR	95% C.I. for EXP(B)	
			Lower	Upper
More than 6 people sleeping together	.002	15.9	4.793	60.155

No statistical difference was found on age, sex, ethnicity and educational status compared both cases and control. There was shortage of water for personal hygiene for cases but not controls. All patients were treated with antibiotic. The whole patients were completely recovered from their illness.

Public health Intervention undertaken to contain the outbreak

Observation of the situation of street people

- Around the bus station there was 20 mass sleeping houses
- The minimum number of homeless people who slept in a small room was ten and the maximum was twenty
- Almost all street or homeless people had no alternative cloth for day and night

Actions Taken

Discussion was made with Tigray regional health bureau PHEM and city health department public health emergency officer, sub city health officer and the team engaged in activating epidemic response task force to participate in active case detection & educating at gatherings to prevent and control the outbreak. The team engaged mass screening and conducted daily reporting cases to next level, Supportive, supervision in the case management & epidemiological linkage. Health education for all street and delousing was done and Mass sleeping houses of (20) were clothed sprayed with Malathion within three days.

Discussion

Our investigation revealed LBRF outbreak in Mekele, Tigray Regional State. The index case was on 8th of February 2016 in Mekele reported by the city administration health office and the study was conducted from 8th -25th February, 2016. All cases 100% (21) were male streets within age range of 15 - 20 years. The reason for rise up and rapid spread of outbreak might be due to street/homeless, or low socio economic, poor personal hygiene, overcrowding and lack of alternative clothes. The number of cases was increase or more than the previous year (2015) cases (zero cases) reported to the regional health bureau in the same period. The evidence showed that all homeless or streets that live in poor personal hygiene and overcrowding condition were at risk of the outbreak. The overall attack rate (AR) was 8 per 100,000 populations and there was no death during the outbreak as compared with outbreaks occurred in other parts of Ethiopia. This could be due to small number of cases, early detection, treatment and good case management in the treatment sites; (1.9% in Asella hospital, 3.6% in Hosaena hospital and 4.6% Gondar, Baher-der & Ethiopia[9,10]. all cases reported from kedamy-weyane may be due to the presence of bus station, forty eight mass sleeping houses for renting with low cost (75 birr per/month) in these kebele bus station was found and were centers of streets. After discussion, action

plan was designed with regional, City administration and health facility authorities on prevention and control activities.

Limitations: *small number of sample size, specific age group, sex and occupation were not representative of the whole Mekele population.*

Conclusions

The attack rate (AR) was 8 per 100,000 populations and there was no death. The whole cases 100% (21) were male streets within age range of 15 -20 years. Poor personal hygiene among homeless or street, overcrowding (mass sleeping) and lack of alternative clothes might contribute to increase the magnitude of the outbreak. Exchanging information between different levels and providing prompt response in reducing undesirable disease outcomes, increasing homeless people awareness, capacity building to health personnel, permanent solution to interrupt the occurrence and distribution of the relapsing fever out-break requires more effort from all government and stakeholders.

Recommendations

1. Organize zonal meeting session with representative from all sectors including the zonal administrators to discuss the way how to minimize mass sleeping houses and solutions for homeless people
2. Increase Street's or homeless people awareness through continuous health information
3. Homeless must wash cloths and take bath at least weekly
4. Close supportive supervision by city health department

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Annex I – Louse Born Relapsing Fever Outbreak Investigation Questionnaire of Mekele-city, Tigray, Ethiopia 2016

Demography

1. Last Name _____ First Name _____ MI _____ Patient's Phone Number _____
2. Street Address _____ region/sub city _____ Keble _____ got _____
LAT _____ LONG- _____
3. Age: _____ Date of Birth: _____ Sex: M _____ F _____
Religion _____
4. Respondent category Case ☐ control ☐
5. Nation: Tigray _____ Amhara----- Other _____

Course of patient

6. Was patient treated at OPD? Yes No unknown
7. IF yes where _____
8. Date of Onset: Was patient hospitalized? YES NO If YES, which hospital? _____
9. Date of admission: _____ Date of discharge: _____ Discharge diagnosis: _____
10. Recovered? YES NO Died? YES NO Date of death: _____
11. Date of 1st Fever: _____ Days Duration _____ Highest Temp: _____
Number of Relapses: _____
12. **Clinical Description (Circle all that applies) for cases only**

Chills	Headache	Nausea or Vomiting	Malaise	Myalgia
Joint Pains	Enlarged Liver	Enlarged spleen	Jaundice	
Photophobia	Nosebleeds	Sweating	Blood in urine	

Other (list) _____
13. Rash: Date of Onset: _____ Rash Appeared On: Trunk Arms Legs Body Head
Soles Palms
Description of Rash: _____

Antibiotic Treatment: Dosage Date Started Date Stopped

Tetracyclines YES NO _____

Penicillin YES NO _____

Other _____

14. Tests for _____ Date of specimen _____ Results _____

_____ Laboratory Name

Knowledge questions

15. Do you know RF yes no don't know

16. How RF can be transmitted? Through body louse sleeping with RF ill person sleeping in overcrowded other _____

17. How RF can be prevented keeping personal hygiene other _____

18. Who can be affected by RF? Poor people steer/orphans other _____

19. Do you think personal hygiene can be preventing RF? YES NO DON'T KNOW

20. Where did you go first when you get ill? Health facility traditional healer holy water stays at home other _____

21. How do you think RF can be cured? Modern medicine traditional medicine holly water nutrias food stays indoor delousing

EXPOSUR

Risk or exposure of louse born relapsing fever	Case status			
	Cases		Control	
	Yes	No	Yes	No
Less than 6 people sleeping together				
More than 6 people or mass sleeping together				
Not taking bath at least weekly				
Not washing clothes at least weekly				
Not changing cloths at night				
Contact with pregnant after get ill LBRF				
Contact with LBRF ill person				

Have soap				
Water access for personal hygiene				
Blood donation after LBRF ill				
Travel history to LBRF susceptible area				

COMMENTS

Investigated by: _____ Phone: (_____)

Agency: _____ Date: _____

1.2. Investigation of Scabies Outbreak South- East Zone, Tigray Regional State, Ethiopia- 2016

Abstract

Background: - Scabies is a neglected parasitic disease that is a major public health problem worldwide, and particularly in resource-poor regions. It affects about 300 million people worldwide yearly. The aim of investigation was to confirm existence of scabies outbreak, identify the risk factors and suggest practical control measures to alleviate the disease burden of the community in Doga-temben, Tigray.

Methods: - Unmatched community based case- control (1:2 or 40 cases and 80 controls), non probability purposive sampling investigation was conducted and a predesigned questionnaire was used for data collection.

Results: - A total of 40 scabies cases were identified from three Kebeles. There were no deaths reported. The mean age was 23.5-years [ranging: 1 to 50-year]. Of total cases 25(62.5%) female and 15 (37.5%) were male. The overall attack rate (AR %) was 0.069%. Multivariate analysis showed that itching in the family[Adjusted Odds Ratio [(AOR) =98.78, 95% CI (12.408_786.245)] infrequent use of soap[(AOR) =19.75, 95% CI (2.702_144.374)], infrequent changing of cloths[(AOR) =17.71, 95% CI (2.815_111.505)], dealing with animal outside house[(AOR) =5.33, 95% CI (2.924_30.828)], and Skin contact with scabies case of last two month [(AOR) =5.16, 95% CI (2.39_28.347)]were independent risk factors for contracting scabies among Doga-temben community.

Conclusions: Scabies outbreak occurred in Doga-temben District, Tigray. It primarily affected under 5 years. Itching in family/collogues, incorrect hygienic practices, and Poor living conditions are important risk factors for transmission of scabies. We recommend enhancing, strong ongoing active case surveillance of scabies; health education on treatment and prevention of scabies to be enhanced and continued in the community by health workers to provide treatment and health education would be very beneficial.

Key words: Outbreak, risk factors, scabies, Doga-temben

Introduction

Scabies, first described in 1687 is caused by the acarine itch mite *Sarcoptes scabies*. Faecal mites penetrate the skin and burrow at a rate of 0.5–5 mm per day. These channels are considered pathognomonic of the disease. Scabies is a neglected parasitic disease that is a major public health problem worldwide, and particularly in resource-poor regions [1]. It affects about 300 million people worldwide yearly [2]. Scabies causes substantial morbidity because of unbearable itch, secondary infection, and post-infective complications such as glomerulonephritis [3, 4, & 5]. The high risk of spreading the infestation to close contacts the characteristic clinical feature is intense nocturnal pruritus [6]. Although the diagnosis of scabies in our third world communities and endemic areas is often easy and straight forward, it could be sometimes one of the most difficult diagnoses in dermatology. Scabies is easy to misdiagnose with other skin problems that are common among schoolchildren, such as popular urticaria, atopic dermatitis, and contact eczema. Epidemiological history, family history, occurrence of itching, which is most severe at night, and distribution of the lesions form the basis of the diagnosis [7]. Treatment includes topical or oral administration of a scabicide agent, an antipruritic agent such as an antihistamine, and an appropriate antimicrobial agent if secondarily infected. Epidemiological studies indicated that the prevalence of scabies is not affected by sex, race, or age and that the primary contributing factors in contracting scabies seem to be poverty and overcrowded living conditions [8, 9]. Multiple factors like overcrowding, poor public health education sleeping habits, and overcrowded sleeping space, sharing of clothes, sharing of towels, incorrect hygiene practices and travel have frequently been cited as risk factors for scabies throughout the world [2, 10_12]

Recently after the ELNINO season happen all over the world [13]. Our country is one of the victims of this climate change due to this Scabies outbreak happen in many parts of the country and the dogatemben district, south east zone, Tigray region. The aim of investigation was to investigate the occurrence of scabies, identify the risk factors and suggest practical control measures to alleviate the disease burden of the community in dogatemben.

Objectives

General objective

To confirm the existence of outbreak, assess risk factors of scabies and undertake appropriate public health control measures, in Dogatemben, Tigray Region in February, 2016.

Specific objectives

- To verify the existence of scabies outbreak in the district
- To characterize scabies outbreak in terms of person, place and time in doga-temben
- To identify factors contributing to the occurrence of scabies outbreak
- To assess the prevention and control interventions to scabies

Methods

Study area

The outbreak investigation was conducted in Doga-temben district started from 25 February to 29 March, 2016. Doga-temben administratively divided in to one urban, and twenty three rural kebeles. There is one primary hospital, 5 health centers and 17 health posts. There were 30 rural and 3 urban health extension workers (33 HEWs) and 114 other health professionals working in the Doga-temben with potential health service coverage of 75%. Doga-temben district has projected total population of 134, 960 for 2015/16.

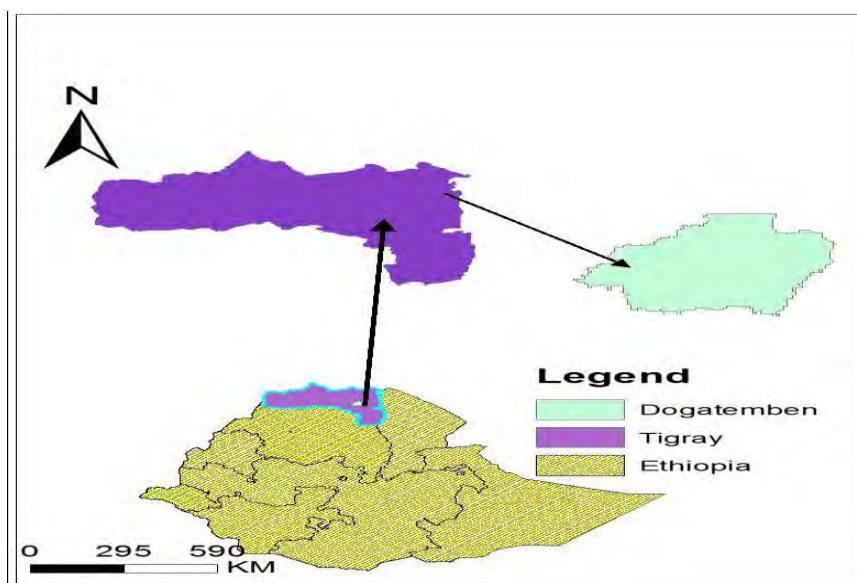


Figure 1.1.3. Map of Doga-Temben District, south-east zone Tigray, March, 2016

Study design and period

Unmatched community based case control and used non probability purposive sampling investigation was conducted forty cases with eighty controls that had no previous history of scabies. Line list of cases was taken and followed daily within the study period, cases and controls interviewed using semi-structured questionnaire, their sleeping spaces, leaving environment were observed and all information hypothesized as risk factors for the scabies outbreak was collected.

Sample size:-Unmatched case control study using non probability convenience sampling technique with 1:2 ratios, where 40 cases and 80 controls were used.

Source and study population:-Target population of the investigation was patients with scabies cases /death come to health facilities and fulfills the case definition/confirmed cases of scabies in affected kebeles of dog-a-temben.

Data collection:-Data was collected with line list (during study period), observation of leaving environment and case management; and purposively selected key informant; Surveillance focal person and community leader interview at all levels and discussion on health seeking behavior with community. Cases were defined using WHO standard scabies case definition, for analytic analysis 40 scabies cases and 80 controls (case to control ratio of 1:2) were interviewed using semi-structured questionnaire that includes; socio-demographic, Knowledge to disease, exposure, and risk factors were included. Active case search was conducted, and epidemiologically linked. Discussion were conducted with District Health Office, district health personnel, teachers, community members, and the district administrative cabinet both prior and exit of the investigation.

Case Definitions

- **Suspected case:** A person with signs and symptoms consistent with scabies.
- **Confirmed case:** A person who has a skin scraping in which mites, mite eggs or mite feces have been identified by a trained health care professional.
- **Contact:** A person *without* signs and symptoms consistent with scabies who has had direct contact (particularly prolonged, direct, skin-to-skin contact) with a suspected or confirmed case in the two months preceding the onset of scabies signs and symptoms in the case.

Epidemiologically linked case: - Is a suspected case, which has contacts with laboratory confirmed case or another epidemiologically confirmed case.

Index case:-Suspected or confirmed scabies case (case that met the criteria for standard scabies case definition) that initiates the public health attention (may or may not visit health facility) and of course, the first case who possibly the source of infection for the other cases emerging.

Data processing and analysis

The data were entered and analyzed using SPSS version 21, and Epi Info Version 7.1.3.0. Results were presented using descriptive table, chart and spot map. Attack rate, P-value and 95% confidence interval (CI) for odds ratio (OR) were used in deciding the significance of the associations.

Data quality control:-We used case based line list for describing scabies cases in terms of time, place and person. However, all data were checked for completeness before entry and cleaned before analysis.

Inclusion criteria

Cases:-Any resident of Doga-temben District who fulfills case definitions of scabies and epidemiologically linked cases and had symptoms of scabies from 28 February to 29 March, 2016; who agreed to participate and accessible in the study was included.

Controls:-A control was any resident of Doga-temben District during the study period and who did not develop signs and symptoms of scabies and agreed to participate was included

Exclusion criteria

Cases:-Those cases that refused to participate, inaccessible or were not conscious and family members in the same house hold were excluded.

Controls:-Those who refused to participate were excluded as well as family members from same house hold.

Ethical issues

A support letter was obtained from Tigray Regional Health Bureau and as this was an emergency epidemic investigation conducted as part of public health intervention, no ethical approval was obtained. Oral informed consent was obtained from participants or from their parents to participate in the study. Confidentiality was assured and no personal details were recorded or produced in this documentation.

Results

Descriptive Epidemiology

We identified conveniently a total of 40 scabies cases from 28th February to 13th March, 2016 from three Kebeles. There were no information of death (CFR=0%). The mean age is 23.5-years [ranging: 1year and 50-year]. Of total cases 25(62.5%) females and 15 (35.5%) were males. The overall attack rate(AR%) was 0.069% and the highest attack rate was observed in tukul Kebele 0.47% followed by emni-ankilalu Kebele 0.006% and the least attack rate was in Adilala 0.005%. The sex specific attack rate (SSAR) for females was 37/100,000 and male 30/100,000.

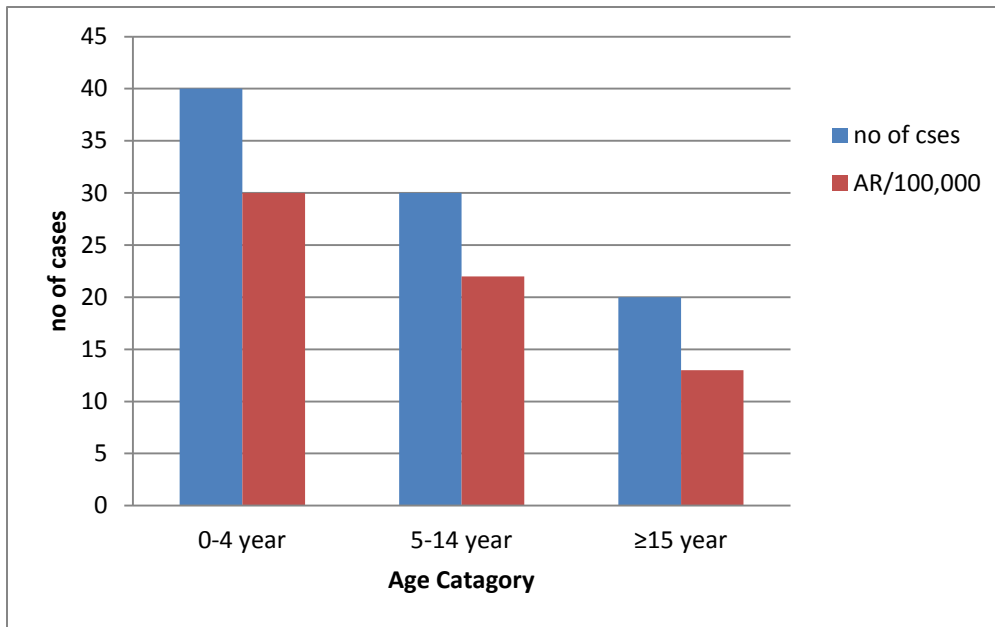


Figure1.1. 4 Distributions of cases by age group and AR/100000 in doga-Temben District, Tigray, Ethiopia, March 2016

The highest Attack Rate was in children 0-4 years of age (30 cases per 100,000) followed by 5-14 years was (22 per 100,000 population) and the least were in age older than or equal 15 years (13/100,000 population). Over all, the most affected age groups are individuals under 5 years of age that is 30 cases per 100,000.

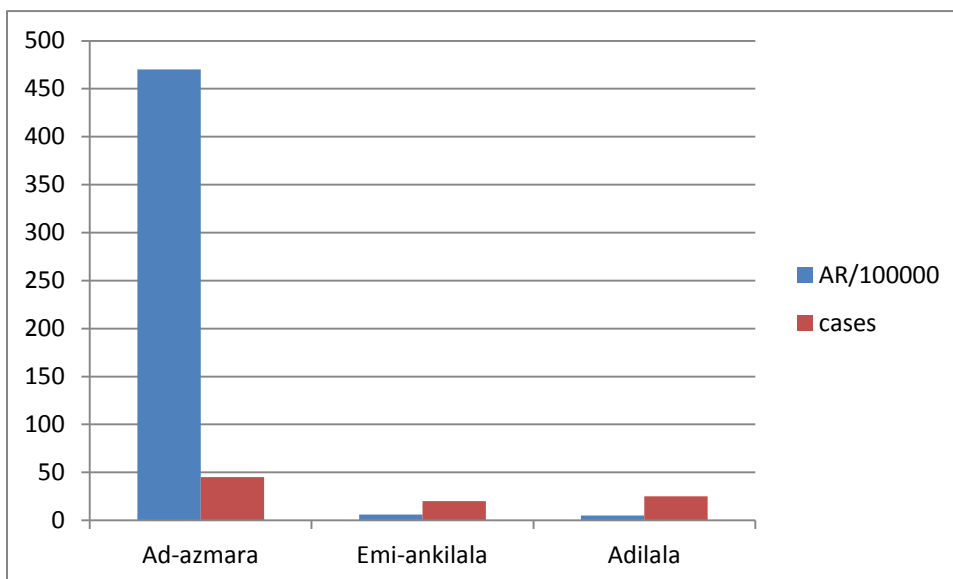


Figure 1.1.5 cases and cumulative Attack Rate of scabies by Kebele in Doga-Temben District, Tigray, March, 2016

The epidemic curve showed that the outbreak has several peaks of onset which stated for 25th of February to 12 March, 2016. The index case was 14 years female from Tukul started in around 25th of January, 2016; however the cases were not reported and didn't come to the attention of health facilities but she was used scabies treatment from private pharmacy and cured.

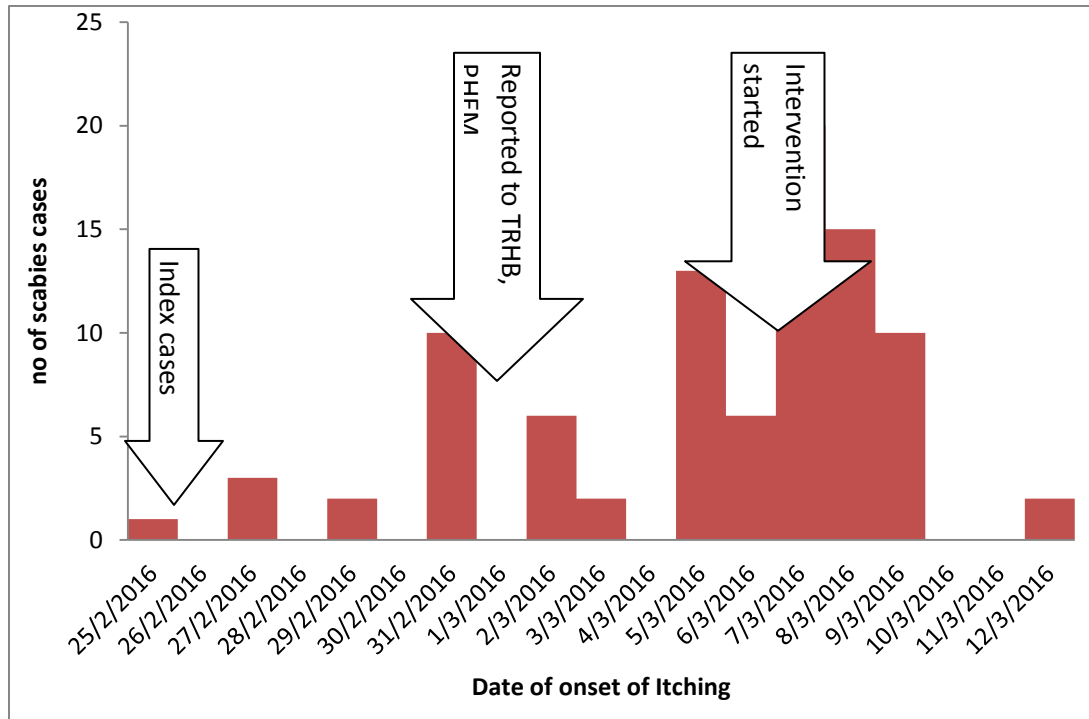


Figure 1.2.6 Epi-curve based on date of onset of Itching Doga-Temben District, Tigray, March, 2016

Analytic Epidemiology

Age of cases ranged from 1 to 50 [median 23.500 (SD 11.29)] years and that of controls ranged from 12 to 50 [median 26.17 (SD 9.42)] years. We arbitrarily considered overcrowded or family size as large when the number of individuals living in the same house or room was > 6 ; 25 (62.5%) cases and 19 (23.75%) controls were from large families. Level of education was matriculation (10 years of education) or lower in 24 (60%) cases and 24 (67.5%) controls.

Univariate analysis showed that itching in the family (OR=51, 95%CI [16.403-158.568]) infrequent use of soap (OR=11.2, 95%CI [4.474_28.228], infrequent changing of cloths (OR=10.3, 95%CI [4.209_25.371], bed sharing (OR=5.4 95%CI [2.286_12.967], large family size (OR=5.3, 95%CI [2.353_12.168], infrequent bathing (OR=4.3, 95%CI [1.934_9.709], physical contact (OR=4.3, 95%CI [1.913_9.815], dealing with animal outside of the house (OR=3.6, 95%CI [1.582_8.496] and low

education(OR=3.1,95%5CI[1.418_6.842] were factors significantly associated with having scabies ; sleeping index was weakly associated.

Table 1.1. 4 Factors associated with scabies identified by univariate analysis Doga-temben Tigray march, 2016

Variables	Case				Control				OR	95%CL
	No.	%	Yes	%	No.	%	Yes	%		
It chining in family/colleagues	6	15	34	85	72	90	8	10	51.000*	16.403_158.568
Infrequent use of soap	8	20	32	80	59	73.8	21	25.2	11.23*	4.474_28.228
changing cloths less than two times per week	9	22.50	31	77.5	60	75	20	25	10.33*	4.209_25.371
sharing bed	9	22.5	31	77.5	49	61.3	31	38.7	5.44*	2.286_12.967
family size greater than ten leaving together	15	37.5	25	62.5	61	76.3	19	23.7	5.35*	2.353_12.168
Bathing less than one times per day	14	35	26	65	56	70	24	30	4.33*	1.934_9.709
skin contact with scabies last two month	12	30	28	70	52	65	28	35	4.33*	1.913_9.815
dealing with animal outside house	10	25	30	75	44	55	36	45	3.667*	1.582_8.496
having animal	10	25	30	75	44	55	36	45	3.667*	1.582_8.49

inside house *										6
low education less or equals to 10 year	16	40	24	60	54	67.5	26	32.5	3.115*	1.418_6.84 2
cloth share with scabies case	21	52.5	19	47.5	56	70	24	30	2.11	0.964_4.62 1
sleeping index	10	25	30	75	28	35	52	65	1.615	0.960_3.78 1

*significant

Multivariate analysis showed that itching in the family, infrequent use of soap, infrequent changing of cloths, dealing with animal outside house, and Skin contact with scabies case of last two month were independent risk factors for contracting scabies among doga-temben community.

Table 1.1.5 Factors associated with scabies identified by Multivariate analysis Doga-temben Tigray march, 2016

Variables	AOR	95%CL
Itching in family/collogues	98.78	12.408_786.245
Infrequent use of soap	19.75	2.702_144.374
Changing cloths<2/week	17.71	2.815_111.505
Dealing with animal outside house	5.33	2.924_30.828
Skin contact with scabies case of last two month	5.16	2.39_28.347

Public health Intervention undertaken to contain the outbreak

Mass treatment was given for all suspected scabies case and Active cases were treated with oral antibiotics to prevent bacterial infections, secondary skin infection to prevent further spread, and to reduce morbidity and mortality attributed to scabies. Routine surveillance system was enhanced and closely followed at each level on a daily bases. Health education was given for the community and students in school to prevent the transmission of the disease, to maximize the health seeking behavior and treat if there is sign and symptoms of scabies.

Discussion

The onset date of the first case was on 25th of February 2016 in Doga-temben reported by the district health office. But the study was conducted from 1-15 March 2016. Among all cases 62.5% 25 were males and 37.5% 15 were within age range of 1 -50 years, 57.5% 23 were between 0-4 years, 35 % [14] were 5_14 and 7.5% was above 15 years of age. The overall attack rate was 0.069%. This study provides important findings regarding risk factors for scabies in the population of study area. All three kebeles of district have no water access for person hygiene; therefore, the results are still useful in the context of this study. Although sample size was not calculated exactly, keeping in mind frequency of the disease, all cases fulfilling the inclusion criteria during the study period were included in the study. The potential risk factors included in our study were those pertaining to itching in family/ colleagues, personal hygiene practices, Changing cloths<2/week, living conditions and skin contact. Low level of education was found in our study to be one of the risk factors contributing towards development of scabies. Less-educated individuals were more prone to having scabies. The reason is probably that less-educated people are less conscious of the importance of personal hygiene and the role of poor hygiene in the spread of communicable diseases. There is a need for public health programmes to educate the population to understand the preventive aspects of diseases like scabies. A history of itching in family or colleagues and dealing with animal outside of the house were significant risk factor for scabies [14, 15]. That prevalence of the disease within a family is an important factor in scabies epidemiology [1]. The presence of mites in fomites coupled with their capability to survive outside the human body for a few days and host-seeking behavior indicate that a person can be infested by dislodged mites in the environment [5]. This study shows history of itching in family or colleagues and dealing with animal outside of the house were significant risk factor for scabies. Personal hygiene practices seem important in contributing towards acquiring scabies. Incorrect hygienic practices correlate with higher rates of apparent infestation [11, 15]. Infrequent bathing and infrequent changing of clothes were significant risk factors in this study. It has often been suggested that fertilized female *S. scabies* mites are responsible for scabies transmission but because of their relatively small number and inclination to remain within burrows, it seems unlikely. There are a far greater number of immature mites on skin surface and they seem important in transmission of the disease [10]. It is quite possible that frequent bathing and rubbing soap and water on the body while bathing removes immature mites from the skin and as the number of these mites reduces, the likelihood of transmission of the infestation also decreases. In our study infrequent use of soap while bathing as significant risk factor for scabies The spread of scabies through physical contact with patient, infested fomites and clothes as risk factors for the spread of scabies [9, 12]. Our study in line with this we found that skin contact, sharing of clothes and sharing of beds were a

risk factor for scabies. In rural community, peoples are sleeping together on the bed and sharing of cloths in the same home. But the spread of scabies through fomites has been a controversial topic. Certain studies have suggested that spread of scabies is possible through sharing of linen, clothes and towels. Scabies mites live their entire lives on human skin as obligate parasites, and can only live outside the human body for up to 48 hours, making transmission through fomites like towels, blankets, bedding etc. possible, but unlikely [4]. Family size was associated with the occurrence of scabies in our study. This finding confirms too many other studies from the same region. However, crowded living conditions, in particular overcrowding for sleeping space, and sleeping habits have been important contributory risk factors for scabies [4, 16, 17]. Transmission follows close personal contact; passing contact like handshaking is insufficient to pass on the mites [15].

Limitations

The following limitations of the study have to be taken into consideration. First, data collection through non-probability convenient sampling study design may imply biased information, especially regarding hygiene habits (such as sharing clothes with others, and dealing with animals outside the house), with potential over reporting of favorable behaviors, for which controlling was difficult. Third, diagnosis was carried out only on a clinical basis; however, owing to the large number of community and the time factor, it was not possible to validate confirmative burrow scraping and microscopic examination for all diagnosed cases. Finally, the study was conducted only during el-Niño seasons owing to consequences drought and malnutrition, and this might have influenced the prevalence of scabies as scabies is claimed to show higher incidence during the el-Niño season; however, detecting and controlling this confounder was also difficult.

Conclusions

Scabies outbreak occurred in Doga-temben District South-East Zone, Tigray. It primarily affected under 5 years. Itching in family/collogues, incorrect hygienic practices, and Poor living conditions are important risk factors for transmission of scabies. We recommend enhancing, strong ongoing active case surveillance of scabies; health education on treatment and prevention of scabies to be enhanced and continued in the community by health workers to provide treatment and health education would be very beneficial.

Recommendations

Given the identified risk factors associated with scabies among communities, steps should be taken to improve their hygiene practices and living conditions. We recommend enhancing, strong ongoing active case surveillance of scabies; health education on treatment and prevention of scabies to be enhanced and continued in the community by health workers to provide treatment and health education would be very beneficial. Greater health awareness of scabies is needed among communities and the public in general and programmes to achieve this should be implemented.

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Annex II –Scabies Outbreak Investigation Questionnaire for Doga- Tembien District, South-East Tigray Zone, Ethiopia February 25-March 12, 2015

Questionnaire for scabies outbreak investigation

1. Interviewer: Name: _____ Phone number: _____

2. Date of Data collection: _____

Region _____ Zone _____ District _____ Kebele _____ Got _____

3. House: Longitude: _____ Latitude: _____

4. Case status: ☐ case ☐ control active case: Yes ☐ No ☐

Socio-demographic information

5. Patient Name _____ 9. Nation Tigray Amhara other

6. Patient phone number: _____ 11. Religion

7. Age: years _____ month's _____ Orthodox Muslim other

8. Sex: ☐ Male ☐ Female

12. Occupation: ☐ Farmer ☐ Merchant ☐ Unemployed ☐ Government ☐ Student
☐ Pastoralist ☐ Other _____

14. Parents of case/control education: Mother: ☐ Illiterate ☐ Primary ☐ Secondary
☐ Tertiary

15. Family size: _____

Knowledge Questions

16. What is Scabies, or are you not sure? ☐ Yes ☐ No ☐ don't know

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

☐ Through skin contact ☐ by sharing clothes of ill person ☐ close contact with an ill person

☐ Other _____

18. How do you think Scabies can be prevented? :

☐ Personal hygiene& sanitation ☐ Avoid contact with Scabies patient ☐ local healing ☐ other-
-

19. Who do you think can be affected by Scabies, or are you not sure?

☐ Children less than 5 years old ☐ Children between 5-18 years ☐ People over 18
years old

☐ Any age groups of both male and women ☐ don't know ☐ other
(specify): _____

20. Do you think good personal hygiene can prevent scabies? ☐ Yes ☐ No ☐ don't know

21. Where did you go first when you get Scabies? ☐ Health Facility ☐ Traditional Healers

☐ Holy Water ☐ Stayed at home ☐ other :(Specify) _____

22. How do you think Scabies can be cured? ☐ Using modern medicine ☐ Using traditional
Medicine ☐ Holly water ☐ by feeding nutritious foods ☐ keeping the sick person indoor

☐ Other (Specify) _____

Clinical presentations (for case ONLY)

23. What were the symptoms?

A. skin rash: ☐ Yes ☐ No

C. tiny red burrows: ☐ Yes ☐ No

B. red bumps and blisters: ☐ Yes ☐ No

D. relentless [itching](#): ☐ Yes ☐

24. When is the date when you first saw a rash on your body? : ____/____/____

25. Were you in your home village when you first noticed you were ill? ☐ Yes (skip to question 15) ☐ No (go to next question)

26. Where were you when the illness started?

District; _____ Keble; _____

27. How long have you had a rash? (Duration of rash) _____ days

28. Do you still have the rash? ☐ Yes ☐ No

29. Did you visit health facility for this illness?

☐ Yes (date went to facility ____/____/____) ☐ No (go to question # 8)

30. How long were you sick before visiting the health facility? _____ days/hours

Treatment given ☐ Yes ☐ No, if yes

☐ 5% Permethrin cream ☐ 25% benzyl benzoate lotion ☐ 10% Sulfur ointment ☐ 10% Crotonitron cream ☐ 1% lindane lotion

31. Did you have the following Complications?

a. Secondary infection? ☐ Yes ☐ No

b. Bacterial skin infection such as impetigo? ☐ Yes ☐ No

Exposure (Risk factors)

Exposures or risk factors of Scabies	Cases status			
	Cases		Control	
	Yes	No	Yes	No
low education less or equals to 10 year				
skin contact with scabies last two month				
Itching in family/colleagues				
History of travel to scabies endemic area last two month				
Bathing less than one times per day				
Changing cloths less than two times per week				
Infrequent use of soap				
Family size greater than six leaving together				
sleeping index				
Alone				

With other one				
More than two				
Sharing bed				
Cloth share with scabies case				
Access of water for personal hygiene				
Dealing with animal outside house				
having animal inside house				
Access for Toilet				

Chapter II- Surveillance Data Analysis Report

Two Year Kalazar Surveillance Data Analysis in Tigray, 2012 – 2014

Abstract

Introduction: Visceral leishmaniasis is caused by parasitic protozoa of the genus *Leishmania*. Humans are infected via the bite of phlebotomies sand flies and also known as kalaazar. If left untreated, the disease can have a fatality rate as high as 100% within two years.

Objective: - To assess the distribution of human Leishmaniasis and death in Tigray from 2012 to June, 2014.

Methods: We conducted a retrospective study of visceral leishmania case and death in humans by reviewing the registers from Tigray Regional Health Bureau; from 2012 to June, 2014. We used case definition of suspected exposure a person who presents with fever more than two weeks and an enlarged spleen and while living in a known VL endemic area or having travelled to an endemic area.

Results: We identified 2224 cases, which were considered, human Leishmaniasis and 52 deaths were occurred from 2012 to February 2014, with annual range of 0 to 30 fatal cases. A total of 2224 case were admitted to different hospitals of the region in the respective years. The overall Incidence rate of two year was 0.045%. The age group ≥ 15 years (85.5%) were the most affected Males account for 95.2% of cases and for 2.1% deaths of leishmania. About 2.1% of the deaths occurred among adults. The highest average incidence rate was observed in West (10.55/100,000) followed by North West (7.75/100,000) and the least incidence in Central Zone (4.5/100,000 /year).

Conclusion: Kalazar is a public health problem in Tigray Region. This study reports kalazar is highest in adults of the aged ≥ 15 years (85.5%). The overall incidence of region was 0.045%. Majority of cases were males and Lack of a robust surveillance system and limited access to health facilities may be possible reasons for low incidence in the remote rural settings and not appropriately handling of data or missing of data. It is highly recommended to Surveillance system of the disease should be in place for estimating the real magnitude and launch Preventive and control measures.

Introduction

The Leishmaniases are diseases caused by protozoan parasites from more than 20 *Leishmania* species that are transmitted to humans by the bites of infected female phlebotomine sandflies. Leishmaniasis is caused by parasitic protozoa of the genus *Leishmania*. Humans are infected via the bite of phlebotomine sand flies, which breed in forest areas, caves, or the burrows of small rodents. There are three main forms of the disease: cutaneous, visceral and mucocutaneous: cutaneous leishmaniasis, visceral leishmaniasis or kala-azar, and mucocutaneous leishmaniasis. In cutaneous forms, skin ulcers usually form on exposed areas, such as the face, arms and legs. These usually heal within a few months, leaving scars. Diffuse cutaneous leishmaniasis produces disseminated and chronic skin lesions resembling those of lepromatous leprosy. It is difficult to treat mucocutaneous forms, the lesions can partially or totally destroy the mucous membranes of the nose, mouth and throat cavities and surrounding tissues. Visceral leishmaniasis, also known as kalaazar, is characterized by high fever, substantial weight loss, swelling of the spleen and liver, and anemia. If left untreated, the disease can have a fatality rate as high as 100% within two years [1]. Estimated 300,000 cases of visceral leishmaniasis (VL) and over 20000 deaths annually, 1 million Cases of cutaneous leishmaniasis (CL) reported in the last five years and 310 million People at risk of infection in six countries reporting over 90% VL cases worldwide [1,2]. Estimated 900,000 to 1,600,000 new leishmaniasis cases occur annually worldwide with approximately 350 million people at risk of the disease. Leishmaniasis is prevalent in more than 98 countries distributed over three major territories in the world. In Ethiopia, both the cutaneous and visceral forms of leishmaniasis are endemic in various localities. Visceral leishmaniasis is found mainly in the lowland of northwest, central, south and southwestern Ethiopia, whereas cutaneous leishmaniasis is widely distributed all over the country. Several outbreaks occurred in the last few years. The disease is spreading to new location due to population movement and HIV-infection. It is estimated that the annual burden of VL ranges from 2000 to 4500 cases in Ethiopia. The disease is endemic in environments that range from desert to rain forests to rain forests in rural and urban setting in over 98 countries of the tropics, subtropics, and southern Europe. The estimated yearly incidence is 0.7-1.2 million cases of cutaneous leishmaniasis (CL) and 0.2-0.4 million cases of visceral leishmaniasis (VL_ also called kala-zar, from Hindi for “black fever”). It is associated with about 2,357,000 disability-adjusted life year (DALYs), 946,000 in men and 1,410,000 in

women, representing a significant rank among communicable diseases. A third of the global figure (770,000 DALYs) is attributed to CL and approximately 20,000_40,000 death per year. Estimation of the burden caused by the leishmaniasis diseases in the world is challenging. Clinical and epidemiological diversity, marked geographic clustering, and poor surveillance system lead to a lack of reliable data on incidence, duration, and impact of the various diseases syndrome. 90% of CL infections occur in Afghanistan, Pakistan, Syria, Saudi Arabia, Algeria, Iran, Brazil, and Peru while with regard to VL cases 90% occur in Bangladesh, Brazil, India, Sudan, south Sudan, and Ethiopia. In Ethiopia, CL is distributed mainly in the highland on an elevation between 1,400_3175 meters above sea level. According to the 2012 WHO global leishmaniasis estimate, Ethiopia is one of the ten high burden countries for CL. VL is predominantly found in the low lands with varying degree of endemicity. It is estimated that the annual burden of VL ranges from 2000_ to 4500 cases. Some of the factors found to be associated with the spread include population movement to and from endemic focus area, poverty and malnutrition associated with presence of the sand-fly vector and reservoirs. The endemicity of VL was recently extended to at least five administrative regions, namely, Amara, Tigray, southern nation, nationalities, and peoples region, oromia and Somalia. In addition, there have been recent outbreaks and in northern and southern parts of the country: libokemkem woreda in Amhara region, Tahtayadiabowereda in Tigray region, and imy in Somali region. The CL burden is roughly estimated to range from 20000 to 30000 cases per year covering very wide geographic area in Ethiopia. The tendency of the diseases to spread to new areas was also noted, as in case of the silt outbreak. Currently, efforts are under going in risk mapping of the diseases throughout the country [3].

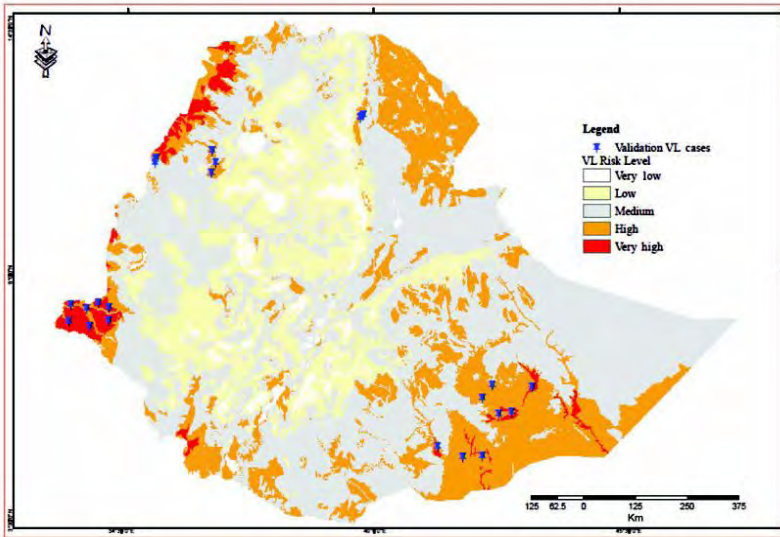


Figure 5. Risk map with respect to visceral leishmaniasis in Ethiopia developed by the combined use of statistical and GIS methods. Blue pins indicate location of cases identified during field validation.

Source *Tsegaw et al. - Geospatial Health 7(2), 2013, pp. 299-308*

Objective

General objective

To assess the distribution of human Leishmaniasis and death in Tigray from 2012 to June, 2014

- To assess the magnitude of VL in Tigray, region
- To describe the distribution of VL in terms of place, person and time
- To assess possible deaths of VL in Tigray, Region.

Methods and materials

A surveillance report based on retrospective record review for the period of 2012 to June 2014 was carried out at Tigray Region using the available VL leishmania data and case based record in which it contains name of hospital, sex, age group, and outcome of the patient. A descriptive statistics was performed to generate rates, frequencies and percentages. The existing data were reviewed the reports of the public health emergency management (PHEM) department from 2012 to June 2014.

Study Design: -cross-sectional surveillance report based on retrospective record review of secondary data.

Study Period: -June 8, 2012 to June 8, 2014 was carried out at Tigre Region.

Study Area

The Tigray Regional state is located in the north part of Ethiopia with a latitude of 12°16' to 14° 49' N and longitude of 36° 27' to a 40° 00' E. Tigray has a total area of 41,409.95Km² and an altitude with a range of 500-4000 meter above sea level. It is bordered by Eritrea to the north, Sudan to the west, the Afar Region to the east, and the Amara Region to the south and southwest [4]. It has estimated population of 4,929,999 projected from 2007 Central Statics Agency population and housing census, of which females comprise 50.75%. From the total population 19.53% are urban inhabitants [5].

VL case definition

A person who presents with fever more than two weeks and an enlarged spleen (splinomegaly) and /or enlarged lymph nodes (lymphadinophathy), or either loss of weight , anemia or leucopenia while living in a known VL endemic area or having travelled to an endemic area .

Study Subjects

- **Inclusion Criteria:** kalazar cases reported and documented as kalazar case (data) in the past two years of Tigre PHEM and available during study period.
- **Exclusion Criteria:** kalazar cases reported and documented (data) in the past two years of Tigray, PHEM and does not available during study period.

Ethical consideration

We obtained written support letter from the Regional Health Bureau prior to data owners and Confidentialities of the information gathered we reassured to Tigray regional Health office via avoiding using data without their consent.

Results

During the last two years a total of 2224 cases and 52 deaths were recorded. . Highest number of fatal kalaazar cases was recorded in 2014 (30deaths), and followed by 2013 (22deaths). A total of 2224 cases were treated for humans' leishmania to different zones and health districts of the region in the respective years. The distribution of VL was highest among ≥ 15 years age group accounts 85.5% flowed by 5_15 years were 12% and the least were ≤ 4 years.

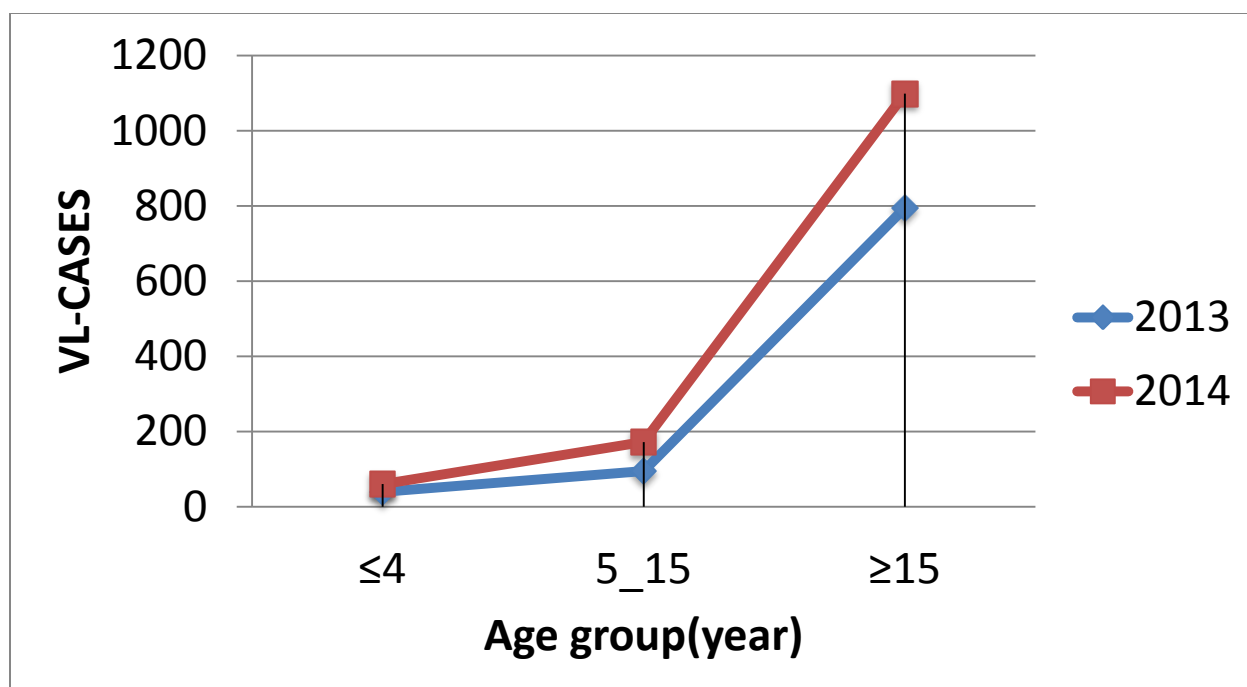


Figure 1.2 7 Distribution of VL cases by different age group in Tigray region, from 2012-2014

Table 1.2, 6 Kalazar cases and case fatality rate by hospitals in Tigre region, from 2012 -2014

Hospitals	Year					
	2013			2014		
	cases	death	CFR%	Cases	Death	CFR%
Aydar	68	3	4.4	62	2	3.2
K/abera	398	7	1.7	555	14	2.5
L/karli	6	0	0	1	0	0
K/mariam	136	6	4.41	253	9	3.56
Mearig	15	1	6.7	39	0	0
Suhul	279	5	1.8	421	5	1.19
Total	893	22	2.46	1331	30	2.25

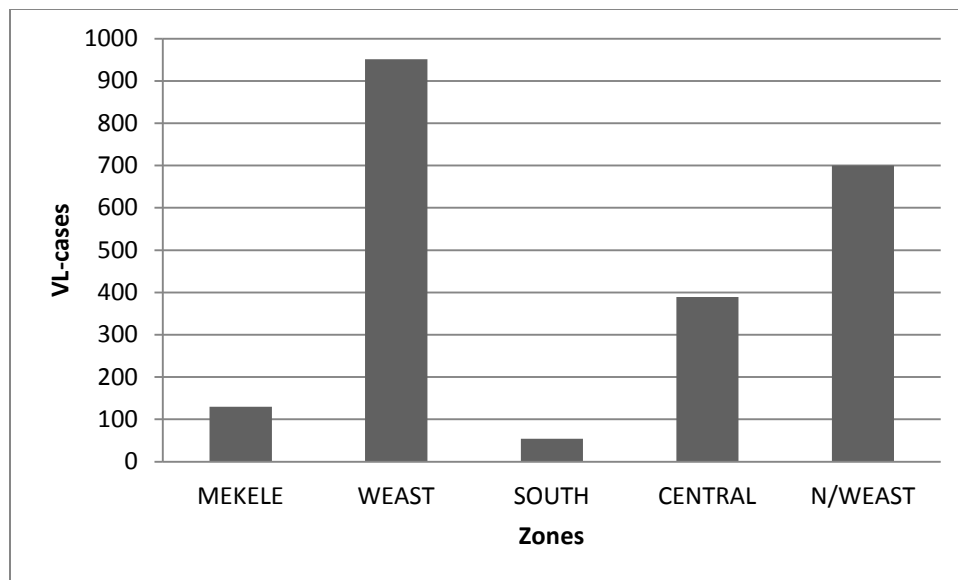


Figure 2. 8 Number of kalazar cases by zones in Tigray region, from 2012-2014

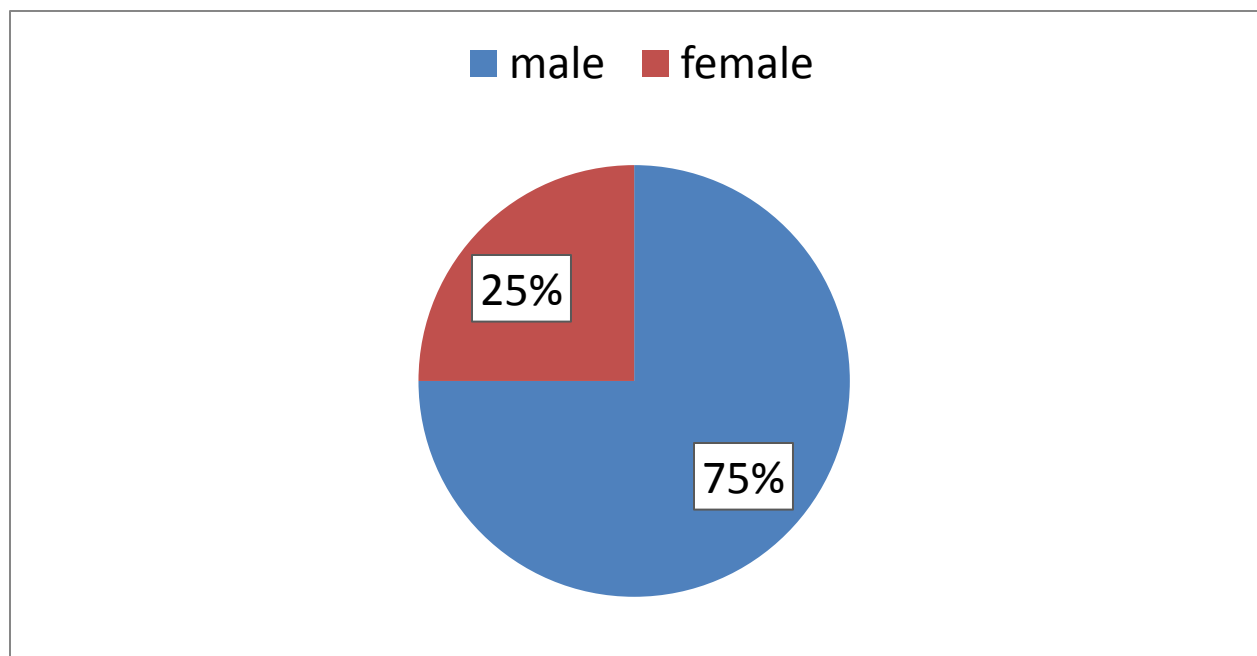


Figure 2.9 Shows sex wise Distribution of distribution of VL in Tigray, from 2012 - 2014

Regarding sex category highest distribution was observed in males in contrast with females

Table 1.2.7 Incidence of kalazars Zones in Tigray Region, 2012 to June, 2014

Zones	2013	2014	Total	Average incidence
	Incidence/100,000	Incidence/100,000		
Mekele	1.6	1.4	3	1.5
South	0.3	0.9	1.2	0.6
Central	3	5.6	8.6	4.3
West	8.8	12.3	21.1	10.55
North west	6.2	9.3	15.5	7.75
Total	19.9	29.5	49.4	24.7

Limitations

Data from PHEM departments are of a poor quality in data entry and management. In addition, there is a great discrepancy of recorded data between PHEM reports of the same year. Large gap in age grouping (data are grouped) and the other problem are HMIS was not available due to server connector problem. Most of the cases have been reported as a monthly summary report of the number of cases alone; Variables like person, place, satiations of patient diagnose and time were missed. There were no data exist more than two year during study period in TRHB.

Discussion

Although the magnitude of the disease is highly under reported and cases are grouped in age group there was a high incidence of cases in Tigray Region. The cases had shown an increasing trend from 2012-2014. The average incidence of cases is highest in West (10.55/100,000) followed by Northwestern Zone (7.75/100,000). This may be due to the people leaving in endemic area to kalazar presence of many sandy flays in areas with no vaccination of disease. It can also be that the reporting is higher west than other zones or settings. The lowest average incidence is reported in South Zone (0.6/100,000) and Mekele Zone (1.5/100,000). Thus could be possible due to low reported and cases among the rural dwellers. Due to the problem of

transportation, having to travel long distance on foot to access health facility, rural residents rather choose to visit nearby traditional healers. A poor surveillance system may have contributed to the low incidence. For these and other reasons the recorded incidence of cases likely underestimates the magnitude of the problem that exists.

The age and sex specific distribution of the records show that most cases were adults aged ≥ 15 years (85.5 %) followed by aged 5-14 years 12.0% and the least affected age group was ≤ 4 years which accounts less than 3%. This is consistent with the study was done in Metema[6] that indicate it is more common in population ≥ 15 years with the rate of 94 %(6) and also in line with the study was done in Kefta homera which were 19.2% of cases were in children 5_15 years, and 3.3% in < 5 years old[4]

This can be explained by close attachments of adults with sand-fly at farmland and even in forests and open field. About 75% of the cases were males with the majority among adults. Males travel frequently than females and especially in rural areas they can travel long distances lonely to visit relatives or for any other socioeconomic purposes.

Conclusion

This study reports kalazar is highest in adults of the aged ≥ 15 years (85.5%). The overall incidence of region was 0.045%. About 75% of the cases were males with the majority among adults Lack of a robust surveillance system and limited access to health facilities may be possible reasons for low incidence in the remote rural settings and not appropriately handling of data or missing of data.

Recommendations

Based on the current finding the following points were recommended

The special treatment and consideration should be given male adult patients or productive age group, Continuous surveillance of the disease and Early diagnoses and treatment of infected individuals was very essential

Further study to assess the exact magnitude of the disease should be conducted

Reference

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Chapter III – Evaluation of Surveillance System

Evaluation of Surveillance System for Malaria of Wekro Tigray Ethiopia, 2016

Summery

Introduction: Public health surveillance is an ongoing systematic collection, analysis, interpretation and dissemination of data regarding a health related event for use in public health action to reduce morbidity and mortality, and to improve health. This is through revealing disease burdens and guiding the action to be taken, the health policy, planning, evaluation of health programs, we conducted the evaluation to describe the surveillance system of malaria evaluate the system attributes and determine the surveillance system is meeting its target

Methods: A cross sectional descriptive study design was used to evaluate the core, supportive and attributable elements of the surveillance system for malaria. One zonal hospital, one district heath offices, and two health centers were purposively included in the study. Data was obtained by CDC standard format of system evaluation of four surveillance units from January 19 to 29, 2016 through observation, document review and interviewing surveillance officers and focal persons using semi structured questionnaire.

Result: In the year 2015, a total of 3482 cases 101 PF and 241 PV attributed to malaria were reported to district health office. Out of four surveillance units evaluated (n=4) the national malaria guideline were available for three (75%) of surveillance units. From all health facilities (n=4), all of them have clinical register or malaria monitoring chart, but one of them have no malaria guideline. Surveillance data was not analyzed and used for action at all level of the surveillance unit. There was no analyzed interpreted and documented report.

Conclusion:

In Wekro district the surveillance system was not satisfactory and supported with the requirements of updated guidelines data was not analyzed, interpreted, and used for action all health facility level. There was no budget line, written feedback, epidemic and preparedness and response plan, regularly base of supportive super vision at all visited health facilities. These surveillance systems are simple and flexible and well accepted by all assessed sites, the

surveillance system of malaria is useful to estimate magnitude of the morbidity and mortality of the disease in the area. We recommend, continuous data monitoring, timely feedback system, refreshment training and close supportive supervision should be conducted

Key words: Malaria, surveillance evaluation, Wekro.

Background

Public health surveillance is the ongoing, systematic collection, analysis, interpretation, and dissemination of data about a health-related event for use in public health action to reduce morbidity and mortality and to improve health [1]. It is essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of data to those who need to know [2]. Public health surveillance is an essential component of evidence-based decision making practices. [3]. It includes case detection and registration, case confirmation, data reporting, data analysis, outbreak investigation, response and preparedness activities, feedback, and communication [4]. A public health surveillance system is dependent on a clear case definition for the health-related event under surveillance. The case definition of a health-related event can include clinical manifestations, laboratory results, epidemiologic information and/or specified behaviors, as well as levels of certainty (e.g., confirmed/definite, probable/presumptive, or possible/suspected). The use of a standard case definition increases the specificity of reporting and improves the comparability of the health-related event reported from different sources of data, including geographic areas [5]. Effective Communicable diseases control relies on effective surveillance and response system that promote better coordination and integration of surveillance function. In Africa, where infectious diseases continue to be a major health problem, many of the national surveillance systems ensure neither timely detection nor an effective response to them [6]. To address this issue, in 1998 the World Health Organization Regional Office for Africa approved the Integrated Disease Surveillance and Response (IDSR) strategy for strengthening infectious disease surveillance and response capacity among its 46 Member States and requested that Member States conduct assessments of their IDSR systems[7]. The findings of which would act as a baseline for reform plans. Integrated disease Surveillance and response is aimed to assist health workers to detect and respond to diseases of epidemic potential, of public health importance and those targeted for eradication and elimination. The information collected through this strategy will help district health teams to respond quickly to outbreaks, set priorities, plan interventions, and mobilize and allocate resources. The Integrated Disease Surveillance and Response strategy links community, health facility, district, regional and national levels with the overall objective of providing epidemiological evidence for use in making decisions and implementing public health interventions for the control and prevention of communicable diseases[7]. Surveillance is essential for the early detection of emerging (new) or

re-emerging (resurgent) infectious diseases. In the absence of surveillance, disease may spread unrecognized by those responsible for health care or public health agencies. By the time the outbreak is recognized, it may be too late for intervention measures. Continuous monitoring is essential for detecting the ‘early signals’ of outbreak of any epidemic of a new or resurgent disease. For disease surveillance to prevent emerging epidemics, the time taken for effective action should be short [4]. In 1996, as part of the response to the growing public health problem with communicable diseases, Ethiopia introduced an integrated disease surveillance and response (IDSR) strategy focusing on 17 priority diseases. Ethiopia adopted the world health organization’s IDSR strategy in 1998, and in October 1999, the ministry of Health (MOH) of Ethiopia and its development partners assessed the country’s surveillance system and used the results to adapt a five-year national plan. [8]. Since 2009 Ethiopia has introduced a new approach i.e. the public health emergency management (PHEM) to guide the prevention and control of any public health emergency problems within the country. Public health surveillance is part and parcel of the public health emergency management that helps to provide advance information of an incoming threat in order to facilitate the adoption of measures to reduce its potential health impact. Currently, the Federal ministry of health identified 20 diseases and health events to be reported immediately (Acute Flaccid Paralysis (AFP), Anthrax, Avian Human Influenza, Cholera, Dracunculiasis, Measles Neonatal Tetanus (NNT), Pandemic Influenza A (H1N1), Rabies, Small pox, Severe Acute Respiratory Syndrome (SARS), Viral Hemorrhagic Fever, Yellow Fever) and Weekly (Dysentery, Malaria, Meningitis, Relapsing Fever, Typhoid Fever, Typhus, Malnutrition) at national level [9].

Burden of Malaria:

Malaria is a global emergency that affects mostly women and children. It is ranked as the leading Communicable diseases in Ethiopia, accounting for about 30 %of the overall disability adjusted life years lost. Approximately 75% of the country is Malarious with about 68%of the total population of 73 million living in areas at risk of malaria. Malaria is reported to cause 70,000deaths each year. In Tigray, of the malaria cases diagnosed, 60%are found to have been plasmodium falsiparum (PF) while the remaining is plasmodiium vivex(PV).Malaria is said to be the third cause of clinical admission consisting 2% all cases, in similar development, while 18.7% of all outpatient visits are malaria caused, 8.3% of deaths are associated with malaria. In

2009, 75822 malaria outpatient cases which are 12.1% of all outpatient cases and in 2010 a total of 83947 malaria cases which is 16.5% of all cases were reported. In 2010, out of the total 168 deaths, 35 (20.8%) of them were due to malaria [9, 10].

Statement of the problem

Despite attaining the high coverage of the major interventions for malaria control like high distribution LLTNs, increasing of health facilities that may be facilitated on time and accurate diagnosis. In the country; malaria remains still the leading causes of morbidity and mortality in all ages particularly in children under five year and pregnant women. This will have a negative impact on the achievement of Millennium Development Goal (MDG) 6 (Combat HIV/AIDS, Tuberculosis and Malaria) [11].

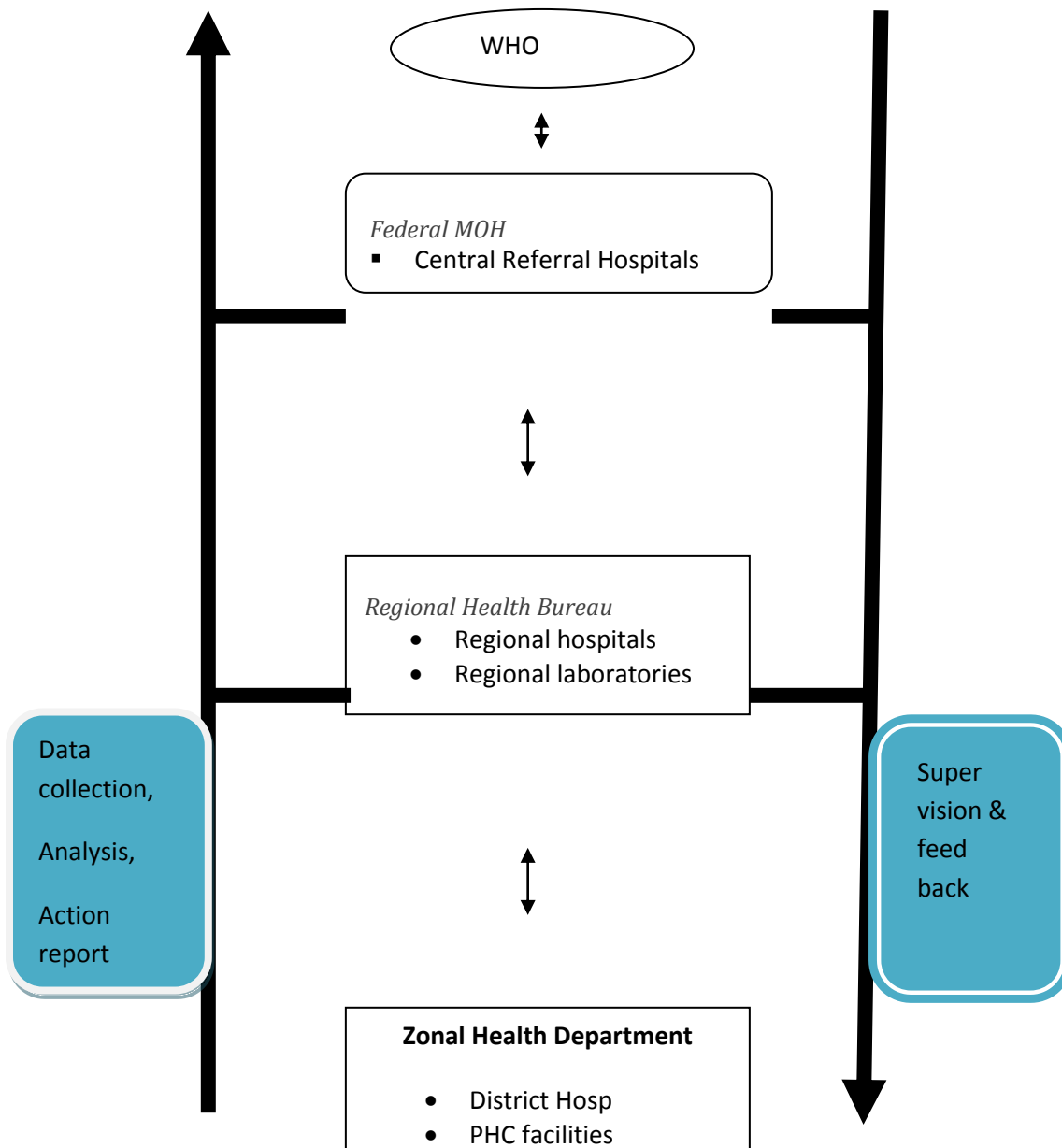
Malaria is a killer parasitic disease it causes more than 800,000 deaths and estimated 2.7 million cases annually; in Africa, malaria is the leading cause of morbidity and mortality; 88% of deaths and 83% of cases occur in Sub Saharan African countries. About 75% of the Ethiopia's land is malarious and 68% of its population is at risk of malaria. Each year, health facilities report 5-10 million clinical cases of malaria and one million confirmed cases. Overall, according to the FMOH's 2009/2010 report, malaria accounts for up to 14% of outpatient consultations (the leading cause of outpatient consultations) and 9% of health facility admissions. However, of these, only one million are reported at the national level, with 462,623 (55.84%) examined and 256,487 (23.68%) confirmed positive by a diagnostic test in 2009/2010. The completeness of this report, though, is questionable. According to FMOH reports, approximately 70,000 people die of malaria each year in Ethiopia. Compiling highly accurate malaria estimates is a challenge. In a country with a weak health information system, the few data which are available are often unreliable and likely to overstate malaria burden, as most cases are diagnosed solely on clinical grounds and only a small percentage of those with fever will have malaria [12].

Rationale of the study:

Malaria is the major diseases of the region with high frequency of endemic and public Health concern but relatively delayed in detection and reporting. Malaria Outbreak it is necessary to assess the surveillance strength in detecting it. Malaria is main indicator of the surveillance system of the region. Use of the collected data at the local level as evidence for public health decision making is not well known; since the wereda is entered in eradication program of 2020

MDG of malaria & system evaluation was not done. The purpose of evaluating public health surveillance systems is to ensure that problems of public health importance are being monitored efficiently and effectively. Public health surveillance systems should be evaluated periodically, and the evaluation should include recommendations for improving quality, efficiency, and usefulness. Evaluation of a public health surveillance system focuses on how well the system operates to meet its purpose and objectives. This evaluation was conducted with the purpose of describing the state of communicable disease surveillance in the district indicating how well the system is working to meet its purpose and objectives.

Information flow in Public Health Surveillance System:



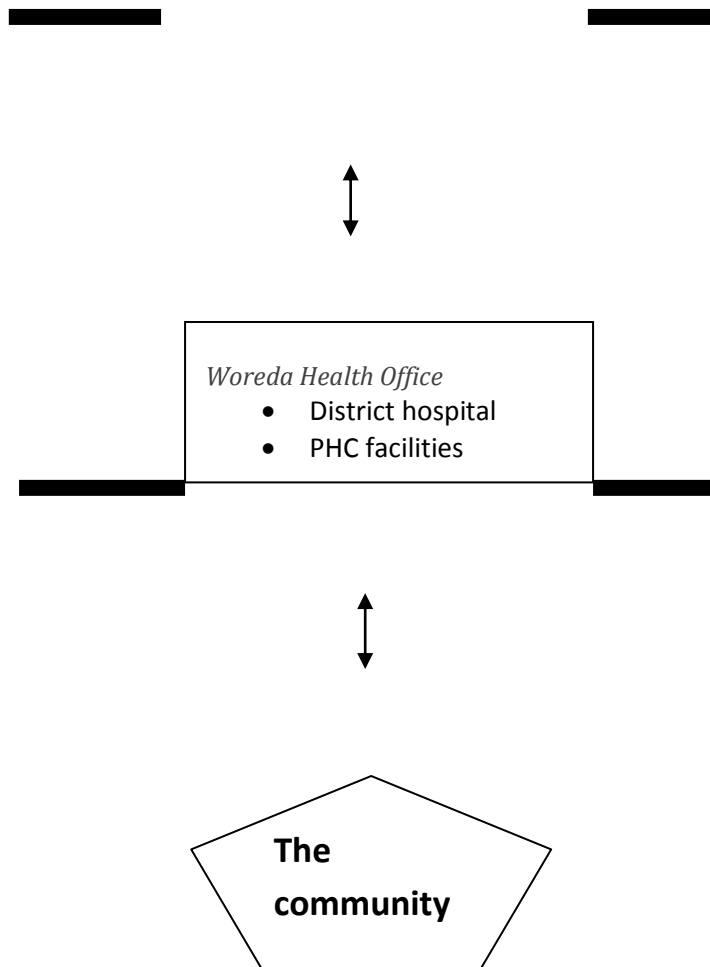


Figure 2.10 data and information flow in IDSR indicating varying cycles (source National PHEM, Guideline, Ethiopia)

Objectives

General objective:

To describe the surveillance system for malaria and evaluate the key system attributes of Wekro, Tigray Region-January 2016

Specific objectives:

- To evaluate the key attributes of surveillance system
- To assess the core activities (case detection, reporting, data analysis and response) of the surveillance system in Wekro
- To assess the changes of quality of surveillance system

Methods**Standard Case Definitions**

Malaria:-Any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea, and vomiting diagnosed clinically as malaria

Community Case Definitions

Malaria:-Any person with fever OR fever with headache, back pain, chills, rigor, sweating, muscle pain, nausea and vomiting OR suspected case confirmed by RDT.

Study area and period: this surveillance evaluation system was conducted Wekro (Health office, two health center and one zonal hospital), and Tigray region from 4/2 /--22/2/2016

Study unit: The study subjects were all the health facilities (, Health Centers, and Hospital), health offices (Wereda Health Offices).

Sample size and sampling: - We were enrolled one wereda health office, two health centers and one zonal hospital. We have selected the study area according to the, purposive sampling method.

Data collection tools and methods: - We collected the data through interview using structured questionnaire with face to face interviewing. The questionnaire was adopted from WHO standard questioner for surveillance evaluation. We also used a Secondary data source like; Annual regional performance report.

Data Analysis: The data were entered in to computer and analyzed.

Operational definition

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

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

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

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

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

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

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

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

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

Sensitivity: - The sensitivity of a surveillance system can be considered on two levels. First, at the level of case reporting, sensitivity refers to the proportion of cases of a disease (or other health related event) detected by the surveillance system. Second, sensitivity can refer to the ability to detect outbreaks, including the ability to monitor changes in the number of cases over time.

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

Timeliness: - Interval between the occurrence of an adverse health event and

(I) the report of the event to the appropriate health agency,

(ii) The identification of that agency of trends or outbreaks,

Or (iii) the implementation of control measures

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

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

Data quality control

Data were collected by interview at four health facility unit level were cross-checked with documents available at that level of the surveillance unit and also completeness of the information after each interview were checked and rechecked.

Dissemination/advocacy of the Study: The finding will disseminate to the regional program managers for possible Interventions, and also will disseminated to (EFELTP).

Ethical consideration:

Before conducting the present evaluation, verbal consent and supportive letter were obtained from the regional health bureau, to Wekro health offices and zonal hospital. Permission for conducting the interview was obtained from the respondents' respective supervisors and the respondents as well.

Result:-Total of 3482 cases were tested by RDT among that confirmed malaria cases were (PF=101 and PV=241). The core functions of the surveillance system (case detection and registration, data reporting, data analysis, outbreak investigation, epidemic preparedness and response; existence and functionality of RRT and the surveillance feedbacks were evaluated. For malaria detection, standard case definitions were available in 100% of the health facilities.

Core functions of the surveillance system

Case Detection, Registration and Case definitions

Standard case definitions for all prioritized diseases are available at district, visited health facilities 4 (100%). However, at visited two health centers and one hospital case definitions are available for Malaria. In these health facilities, these case definitions were posted on the wall.

Data Reporting:-Federal Ministry of Health and its stakeholders are responsible for designing and preparation of PHEM reporting formats. District health office has provided these formats through Regional Health Bureau and NGOs. During the last six months, there was no shortage of weekly PHEM reporting formats. Wekro district is using telephone to report weekly surveillance activities to next level. All visited health facilities were using telephone to report for zonal health office while the regional health bureau was using email to send to the national PHEM.

Data Analysis:-At district level, malaria data were analyzed weekly by person, time and place but not health facilities level. At visited districts, analysis was performed weekly for malaria disease. All of them are performing only trend analysis (line graph) for malaria in weekly basis but didn't interpret, and used for action.

Existence of Action Threshold Levels:-Action threshold level is available at district and all visited health facility level on National PHEM Guideline. In addition, in all visited health centers and hospital there were action threshold levels for all selected diseases including malaria.

Epidemic Preparedness and Response:-There is written epidemic preparedness and response plan at district level. There was no written epidemic preparedness and response plan at all visited health facilities. Regarding existence and activities of epidemic management committee and rapid response team, there is established committee at visited districts.

Resources and availability of budget for Surveillance Activities

There is budget allocated from government source for PHEM activities at regional level. Unlikely, there is no allocated budget from government source for public health emergency activities at zonal level. This problem is extended to the districts and they are depending on zonal or regional support. Due to this reason, district PHEM focal persons were discouraged to surveillance activities. Even though, all visited health facilities had computers and its accessories, they did not have for PHEM activities separately rather they use it for all activities.

Stationery is not enough at one health center. In addition shortage of hygiene and sanitation materials was observed at that health center.

Feedback:-Wekro health department has not given written feedback for all health facility in 2015/16. However this activity was not regularly done for all health facility level. Wekro give written feedback for all health facilities with integration of other activities that consists few indicators of surveillance activities quarterly.

Supportive Supervision:-During the past six months, Wekro health department conducted supportive supervision only once on surveillance activities for districts and health facilities. Shortage of vehicle, budget and logistics were attributed for incapability of conducting regular supportive supervision at health facility level. The districts have conducted integrated supportive supervision for health facilities with limited number of surveillance indicators of visited health centers, and none of them were supervised regularly in the past 6 months by higher levels. WHO surveillance officers made regular supportive supervision of districts.

Training:-Training as one of the mechanism to build the capacity of health workers and strengthening the surveillance system. Wereda level majority of PHEM officer have training at least once a year through workshops and review meetings but health center and hospital IDSR focal persons have no training about PHEM.

Laboratory:- Districts and health facilities have the capacity to collect and transport biological specimens such as: blood and stool to the national laboratory accompanied with case based reporting form for further analysis and confirmation. Ethiopia Public Health Institute is responsible to test the specimen and inform the result based on the standard time on the national guideline to the national Public Health Emergency Management (PHEM).

Attributes of the Surveillance System

Usefulness: The surveillance serves for a total population of district. From this population a total of 3482 cases of malaria were reported. All gaps on training and supportive supervision as well as no analysis of data, malaria surveillance system found useful to quality of surveillance in some level.

Simplicity: Reporting formats used were simple and can take, on average, only 10-15 minute to fill the format but it takes not more than 30 min for lab confirmation in most of the health

facilities. In all health facilities, 100% of asked professionals were responded correctly for case definitions of malaria.

Flexibility: - The current report format is flexible and not difficult to add additional information required by a surveillance system especially if new disease emerged. But there is limitation of the format in lacking some variables which most required for analysis like age, sex, address and clinical symptoms.

Data Quality:-Reporting formats of weekly and immediately reportable diseases are well understood at district, zonal hospital and health center levels.

Acceptability: - Except lack of refreshment trainings, logistic supply, all surveillance officers believe that surveillance system is helpful and important for public health.

Representativeness: - representativeness refers to the degree to which the reported cases reflect the occurrence and distribution of all the cases in the population under surveillance. Geographical representativeness and health service physical accessibility in the district is particularly greater important in an early warning system to ensure detection of outbreaks nationally notify-able diseases. In addition it is related to the potential health service coverage of visited districts in the zone was above 100%, provide that the surveillance system in wereda was representative.

Timeliness & completeness:

Timely report of surveillance data is important for early public health interventions. Timeliness is a speed between steps in a public health surveillance system. As per standard of National PHEM the expected level of report timeliness is 80% and above. Early case detection is another key attribute of timeliness assessment. The whole assessed health facilities of Work's timeliness & completeness was 100%.

Sensitivity: - Sensitivity is the proportion of cases of a disease (or other health-related event) detected by the surveillance system. It was difficult to evaluate sensitivity of the system without knowing false negatives and positives that identified by the system. Even though there are false positives those are confirmed as negative by Gold Test/Microscope/, there are no false negatives identified by system and later confirmed by Gold test as true negative. Due to this reason, it was difficult to measure sensitivity of the system at each level.

Predictive Value Positive (PVP):-The total number of individuals who are actually with the disease was not determined; therefore we calculated the PVP 9.8%.

Stability: The surveillance system ensured to function in proper way and according to the standard guideline. It is stable. Reports were collected and aggregated by health facility and reported to directly to the regional PHEM.

Discussion

The main goal of performing public health Surveillance is to assess the health status of the community, establish public health priorities and reduce the burden of disease in a community by making necessary public health actions. Supportive supervision and feedback are a key function of public health surveillance system. At all visited level there is no regularly supportive supervision and strong written feedback. As region and district is essential role player in preparing and disseminating supportive supervision and feedback of surveillance activities for health facilities in different method, it was not done well mainly in written forms. There were no budget line either from government or non-governmental organizations for surveillance activities at district level is remains a major problem to run tasks under PHEM towards their objectives. Epidemic preparedness refers to the existing level of preparedness for potential epidemics and includes availability of preparedness plans, stockpiling, designation of isolation facilities, setting aside of resources for outbreak response. There is no written epidemic and preparedness and response plan at all visited health facilities. This may cause weak case detection and response during epidemics. The aim of preparedness is to strengthen capacity in recognizing and responding to public health emergencies through conducting regular risk identification and analysis, establishing partnership and collaboration, enhancing community participation and implementing community-based interventions and strategic communication during the pre-emergency phase and ensuring their monitoring and evaluation [3]. Additionally shortage of resources for data management is being a challenge to generate and disseminate PHEM reports timely through maintaining their quality. There were no problems on the simplicity of the system regarding case definitions of selected diseases, reporting system and additional data collected on cases at all visited levels. It was agreed by all respondents that the surveillance system is flexible for newly occurring health and health related events. Reporting formats of priority diseases are easy and clear to fill for data collectors at district level. Timeliness and completeness of report is important for timely public health interventions. The average annual completeness and timeliness of weekly report at district level is above expected national level (80%) due to good handling and management of data.

Strength of the study

This malaria surveillance system evaluation is conducted in the district for the first time and will provide base line information for further studies.

Conclusion

Periodic assessment of public health surveillance system is a key activity to identify strengths and weakness of the existing system. This will be more effective if it was done in collaboration with key stakeholders. In Wekro district the surveillance system was satisfactory and efforts should be continue to improve the system, but data was not analyzed, interpreted, and used for action all health facility level. There was no budget line either from government or non-governmental organizations for surveillance activities at district level. There is no written feedback, epidemic and preparedness and response plan, regularly base of supportive supervision at all visited health facilities. These surveillance systems are simple and flexible and well accepted by all assessed sites finally, the surveillance system of malaria is useful to detect outbreaks, estimate magnitude of the morbidity and mortality of the disease in the area.

Recommendation

Prioritized diseases data should be analysis, interpret, and use for action at district and health facility level. Written feedback epidemic and preparedness and response plan, and supportive supervision should be given at regularly base to all level. Budget line should be at district level. Data quality assessment should be conducted at all levels as many problems were identified on reporting system during this evaluation.

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Annex III – Surveillance Evaluation Questionnaire for Malaria

1 REGIONAL /ZONAL LEVEL QUESTIONNAIRE

Identifiers:

Interviewer

Respondent

Date

Surveillance System

Interviewer

name of health facility

General

I. Availability of a National Surveillance Manual

1. Is there a national manual for surveillance?

Yes No Not applicable Unknown

2. *If yes*, describe (last update, diseases included, case definitions, surveillance and control, integrated or different for each disease):

II. Case Detection and Registration

3. Do you have standard case definitions for the Country's priority diseases like malaria, typhoid fever, and measles?

Yes No Unknown Not applicable

4. Obs [1 to n priority diseases] observed the standard case definition for (each priority disease)

Yes No Unknown Not applicable

III. *Data reporting*

Presence of recommended reporting forms in the country at all times over the past 6 months

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

Yes No Unknown Not applicable

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

Yes No Unknown Not applicable

7. What are the reporting entities for the surveillance system?

a. Public health facilities d. Private health facilities

B. NGO health facilities. Others _____

C .Military health facilities

8. Percent of district reports (either directly or through an intermediate level) received each reporting period at the central level during the past 3 months:

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

Weekly: /12 times the number of districts

Immediately: /-----times the number of districts

9. on time (use national deadlines)

Number of weekly reports received on time: /12 times the number of districts

10. Was there any report of the immediately reportable diseases in the past 1 month? Yes/ No

11. If yes, with in what time is the report received after detection of the case/ diseases?

A. Less than 1 hour d. 3-7 days

B. 2-24 hour E. After 1 week

C. 1-2 days

12. Percent of districts that have means for reporting to next level by e-mail, telephone, fax or radio

13. Capacity to report to next level by e-mail, telephone, fax or radio:

How do you report?

a. Mailed Radio

b. Fax e. Electronic

c. Telephone f. Others

IV. Data analysis

Does the regional level:

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

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

Yes No Unknown Not applicable

15. Describe data by place?

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

Yes No Unknown Not applicable

16. Describe data by time?

(Obs) Observed description of data by time:

Yes No Unknown Not applicable

17. Perform trend analysis?

Obs Observed line graph of cases by time

Yes No Unknown Not applicable

18. List disease for which line graph is observed

19. Have an action threshold defined for each priority disease?

Do you have an action threshold defined for malaria, Measles, and typhoid fever? Yes No
Unknown Not applicable

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

21. How often do you analyze the collected data?

a. Daily d. Monthly

b. Weekly e. Quarterly

c. Every 2 weeks f. As needed

22. Have appropriate denominators?

Obs Observed presence of demographic data (E.g. population by district and hard to reach groups)

Yes No Unknown Not Applicable

V. Outbreak Investigation

Percent of suspected outbreaks that were investigated in the past 6 months

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

24. List the diseases: _____

25. Of those, number investigated: _____

(Observe reports and take copies if possible)

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 districts that investigated an outbreak, percent that looked for risk factors

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

29. Of districts that investigated an outbreak, percent that used the data for action (action include containing outbreak, improving surveillance, community actions)

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

VI. Epidemic preparedness (relevant for epidemic prone diseases)

30. Existence of a Regional/Zonal plan for epidemic preparedness and response

Obs observed a written plan of epidemic preparedness and response Yes No Unknown Not applicable

31. Existence of emergency stocks of drugs, vaccines, and supplies at all times in past 1 year:

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

Yes No Unknown Not applicable

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

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

Yes No Unknown Not applicable

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

Obs observed the existence of written case management protocol for at least one priority disease?

34. *If yes*, list: _____

35. Presence of a budget line for epidemic response

Is there a budget line for epidemic response?

Yes Unknown Not applicable

36. I. Existence of a regional epidemic management committee

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

Yes No Unknown Not applicable

37. Existence of a regional rapid response team for epidemics

Does the country have a rapid response team for epidemic?

Yes No Unknown Not applicable

VII .Response to epidemics

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

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

Yes No Unknown Not applicable

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

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

Yes No Unknown 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 regional level produced in the last year?

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

Yes No Unknown 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? _____

Obtained required number of visits from regional level _____

43. the most usual reasons for not making all required supervisory visits. (Text)

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?

Yes No Unknown Not applicable

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

Percent of health personnel that have received post-basic training in epidemic management

47. Have you received any post-basic training in epidemic management?

Yes No Unknown Not applicable

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

49. Obtain and analyze the content of the surveillance and epidemic management training.

Strengths _____

Weaknesses _____

Opportunities _____

Threats _____

XI. Resources

Percent of sists that have

50. Data management

A .Computer e. Statistical package

b. Printer f. Data manager

c. Photocopier

51. Communications

a. Telephone service d. Satellite phone

b. Fax e. Computers that have modems

c. 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?

Yes No Unknown Not applicable

Budget for surveillance

55. Is there a budget line for surveillance in the Regional Health Bureau budget?

Yes No Unknown Not applicable

56. *If yes*, what is the proportion: %?

Opportunities for strengthening surveillance

57. How could surveillance improved

XIII. Surveillance Co-ordination

Existence of focal unit for surveillance at RHB level

58. Obs is there a focal unit for surveillance at the MOH central level? [Observe organ gram me of MoH to confirm]

Yes No Unknown Not applicable

Opportunities for integration

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/region in 2007 EFY

Measles _____ cases _____Deaths

Malaria _____ cases _____Deaths

Typhoid fever _____ cases _____Deaths

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

Does the surveillance system help?

1. To detect 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

A. Measles

B. Malaria

C. Typhoid fever

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 form

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

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?

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

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

C. Reporting formats are difficult to understand

D. Report formats are time consuming

E. Other: _____

v. Representativeness:

1. What is the health service coverage of the district/ zone/ region? _____%
2. Do you think the populations under surveillance have good health seeking behavior for these diseases? Yes / No
3. Who do you think is well represented by the surveillance data? the urban/ the rural

vi. Timeliness:

1. -----
2. -----

vii. Stability:

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

2. Surveillance System Evaluation District (intermediate level) Questioner

Identifiers

Assessment team District name

Date region/province

Interviewer country

Respondent surveillance system

Percent of districts with available national surveillance manual

1. Is there a national manual for surveillance at this site?

Obs Observe national surveillance manual:

Yes No unknown Not Applicable

I. Case confirmation

Percent of districts that have the capacity to transport specimens to a higher level lab

2. Does the district have the capacity to transport specimens to a higher level lab?

Yes No Unknown Not applicable

Percent of districts with guideline for specimen collection, handling and transportation to next level

3. Does the district have guidelines for specimen collection, handling and transportation to the next level?

Yes No Unknown Not applicable

II. Data reporting

Percent of sites that have forms recommended for the country for that site at all times over the past 6 months

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

Yes No Unknown Not applicable

Percent of health facilities that reported each reporting period to the district level during the past 3 months:

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

Weekly: _____ /12 times the number of health facilities

Immediately: _____ /-----times the number of health facilities

On time (use national deadlines)

6. Number of weekly reports submitted on time: ____/12 times the number of health facilities

7. Number of immediately reports submitted on time: ____/3 times the number of health facilities

8. Percent of districts that have means for reporting to next level by e-mail,

Telephone, fax or radio

How do you report?

a. Mail d. Radio

b. Fax e. Electronic

c. Telephone f. Others

Strengthening reporting

9. How can reported be improved?

III. Data analysis

10. I. Percent of sites that:

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

Obs Observed description of data by age and sex

Yes No Unknown Not applicable

11. Describe data by place

Obs Observed description of data by place (locality, village, work site etc)

Yes No Unknown Not applicable

12. Describe data by time

Obs Observed description of data by time

Yes No Unknown Not applicable

13. Perform trend analysis

Obs Observed line graph of cases by time

Yes No Unknown Not applicable

14. List _____

15. Have an action threshold for each priority disease

Do you have an action threshold for any of the country priority diseases?

Yes No Unknown Not applicable

16. If yes, what is it? _____ cases _____ % increase _____ rate

17. Have appropriate denominators

Obs Observed presence of demographic data at site (E.g. population <5 yr, population by village, total population)

Yes No Unknown Not applicable

18. Who is responsible for data analysis? _____

19. How often do you analyze the collected data?

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

IV. Outbreak investigation

20. Percent of suspected outbreaks that were investigated in the past 6 months:

Number of outbreaks suspected in the past year 6 months: _____

Obs Of those, number investigated (Observe reports and take copies if possible):

21. Percent of districts that have ever conducted an outbreak investigation

[Number of districts assessed that have ever conducted an outbreak investigation, Number of districts assessed to obtain indicator]

22. Has your district ever investigated an outbreak?

Yes No Unknown Not applicable

V. Epidemic preparedness

23. Percent of districts that have a plan for epidemic preparedness and response

Obs observed written plan of epidemic preparedness and responses

Yes No Unknown Not applicable

24. Percent of districts that have emergency stocks of drugs and supplies at all times in past 1 year

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

Obs observed the stocks of drugs and supplies at time of assessment

Yes No Unknown Not applicable

25. Percent of districts that experienced a shortage of drugs, vaccines or supplies during the most recent epidemic (or outbreak)

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

Yes No Unknown Not applicable

26. Presence of a budget line for epidemic response or access to funds for epidemic response

Is there a budget line or access to funds for epidemic response?

Yes No Unknown Not applicable

27. Percent of districts that have an epidemic management committee

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

Yes No Unknown Not applicable

28. Percent of districts that have rapid response team for epidemics

Does the district have a rapid response team for epidemics?

Yes No Unknown Not applicable

VI .Response

29. Percent of sites that implemented prevention and control measures based on local data for at least one reportable disease or syndrome

Has the district implemented prevention and control measures based on local data for at least one reportable disease or syndrome?

Yes No Unknown Not applicable

30. Percent of districts that responded within 48 hours of notification of most recently reported outbreak

Obs Observed that the district responded within 48 hours of notification of most recently reported outbreak (from written reports)

Yes No Unknown Not applicable

31. Percent of districts that achieved acceptable case fatality rates (e.g. 10% for Meningococcal CSM 1% for Cholera) during the most recent outbreak

Obs observed that the district achieved an acceptable case fatality rate for most recent outbreak (Observe from outbreak report)

Yes No Unknown Not applicable

32. Percent of epidemic management committees that have evaluated their preparedness and response activities during the past year

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

Yes No Unknown Not applicable

VII. Feedback

33. Percent of sites that have written report that is regularly produced to disseminate surveillance data

How many feedbacks written reports has the district produced in the last year?

Obs Observed the presence of a written report that is regularly produced to disseminate surveillance data (district and higher)

Yes No Unknown Not applicable

34. Percent of sites that have received a report or bulletin from a higher level during the past year on the data they have provided

How many feedback bulletin or reports has the district received in the last year?

Obs Observed at least 1 report or bulletin at district from a higher level during the past year on the data they have provided

Yes No Unknown Not applicable

VIII. Supervision

35. Percent of individuals supervised in the past 6 months

How many times have you been supervised in the last 6 months?

Obs Observed supervision report or any evidence of supervision in last 6 months

Yes No Unknown Not applicable

36. Of those supervised in the previous 6 months, percent of individuals for which the supervisor from the next higher level reviewed surveillance practices appropriate to their level

Obs observed supervision report or any evidence for appropriate review of surveillance practice

Yes No Unknown Not applicable

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

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

(Obtain required number of visits from central level)_____

38. the most usual reasons for not making all required supervisory visits. (Text)

Reason 1_____

Reason 2_____

Reason 3_____

IX. Training

39. Percent of health personnel (in position of responsibility) trained in disease surveillance

Have you been trained in disease surveillance?

Yes No Unknown Not applicable

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

41. Proportion of districts with staff trained in surveillance and epidemic management

What percent of your personnel in the district have been trained in surveillance and epidemic management? _____

*X. Resources*_____

42. I. Percent of sites that have:

Logistics

a. Electricity c. Motor cycles

b. Bicycles d. Vehicles

43. Data management

a. Stationery d. printer

b. Calculator e. statistical package

c. Computer

44. Communication

a. Telephone service c. radio

b. Fax d. Computers that have modems

45. Information education and communication materials

a. Posters e. generator

b. Megaphone f. screen

c. Flipcharts or Image box g. projector (movie)

D.VCR and TV set h. others specify

46. Hygiene and sanitation materials

a. Spray pump b. Disinfectant

XI. Surveillance co-ordination:

47. Existence of a surveillance co-ordination focal unit or person at district level

Is there a surveillance co-ordination focal point within the district epidemic management committee?

XII. Satisfaction with surveillance system _____

Satisfaction with the surveillance system

Are you satisfied with the surveillance system?

Yes No Unknown Not applicable

48. If no, how can the surveillance system are improved?

49. Opportunities for integration

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

3. Surveillance System Evaluation Health Facility Questioner

Identifiers

Assessment team Type of health facility

Date District

Interviewer Region/province

Respondent Country

Name of health facility Surveillance system

1. Percent of health facilities with national surveillance manual

Is there a national manual for surveillance at this site?

Obs Observe national surveillance manual:

Yes No Unknown Not applicable

I. Case detection and registration _____

2. Percent of health facilities that have a clinical register

Obs observed the existence of a clinical register

Yes No Unknown Not applicable

3. Percent of health facilities that correctly register cases

Obs observed the correct filling of the clinical register during the previous 30 days

Yes No Unknown Not applicable

4. Percent of health facilities that have standardized case definitions for the country's priority diseases

Do you have a standard case definition for: (each priority disease), malaria, TF, measles,

Yes No Unknown Not applicable

5. Obs Observed the standard case definition for: (each priority disease)

Yes No Unknown Not applicable

6. Percent of health facilities that use standardized case definitions for the country's priority diseases

7. Obs observed the respondent correctly diagnosing one of the counters 'priority disease using standard case definitions

Yes No Unknown Not applicable

(Select one of the priority diseases in the facility's clinical register and ask how they diagnosed it —interviewer should have the standard case definition from MOH)

Incase confirmation _____

7. Percent of health facilities that have the capacity to collect specimens (sputum stool, blood/serum and CSF)

Are you able to collect sputum Y N U N/A?

Stool Y N U N/A

Blood Y N U N/A

CSF at this facility Y N U N/A

8. Obs Observed the presence of materials required to collect

Stool Y N U N/A

Blood/serum Y N U N/A

CSF Y N U N/A

9. Percent of health facilities that have the capacity to handle specimens until shipment

Do you have the capacity to handle sputum, stool, blood/serum and CSF until shipment at this facility?

Yes No Unknown Not applicable

10. Obs Observed presence of functional cold chain at health facility

Yes No Unknown Not applicable

11. Percent of health facilities that have the capacity to ship specimens to a higher level lab

12. Obs Observed presence of transport media for stool at health facility

Yes No Unknown Not applicable

13. Obs Observed presence of packing materials for shipment of specimens at health facility

Yes No Unknown Not applicable

III. Data reporting _____

14. Percent of sites that have appropriate surveillance forms for that site at all times over the past 6 months

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

Yes No Unknown Not applicable

15. Percent of sites that reported accurately cases from the registry into the summary report to go to higher level

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

A. Obs Measles Y N U N/A

B. Obs Malaria Y N U N/A

C. Obs Typhoid fever Y N U N/A

16. Percent of sites that reported each reporting period to the next higher level during the past 3 months

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

Obs Weekly: /12 times the number of sites

Obs immediately: /--times the number of sites

17. on time (use national deadlines)

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

Obs Number of immediately reports submitted on time: ____ /--times the number of sites

18. Percent of HF that have means for reporting to next level by e-mail, telephone, fax or radio

How do you report?

a. Mail d. Radio

b. Fax e. Electronic

c. Telephone f. other specify

19. Strengthening reporting

How can reporting be improved?

IV. Data analysis

20. Percent of site that Describe data by person (outbreaks, sentinel)

Obs Observed description of data by age and sex

Yes No Unknown Not applicable

21. Describe data by place:

Obs Observed description of data by place (locality, village, work site etc)

Yes No Unknown Not applicable

22. Describe data by time

Obs Observed description of data by time

Yes No Unknown Not applicable

23. Perform trend analysis

Obs Observed line graph of cases by time

Yes No Unknown Not applicable

24. Have an action threshold for each priority disease

Do you have an action threshold for any of the Country priority diseases?

Yes No Unknown Not applicable

25. *If yes*, what is it (Ask for 2 priority diseases)? _____ cases _____ % increase _____ rate

26. Who is responsible for data analysis? _____

27. How often do you analyze the collected data?

a. Daily d. monthly

b. Weekly e. quarterly

C. Every 2 weeks f. as needed

28. Have appropriate denominators

Obs Observed presence of demographic data at site (E.g. population <5 yr., population by village, total population)

Yes No Unknown Not applicable

V. Epidemic preparedness _____

29. Percent of health facilities that have a standard case management protocol for epidemic prone diseases

Obs Observed the existence of a written case management protocol for 1 epidemic prone disease

Yes No Unknown Not applicable

VI. Epidemic response _____

30. Percent of sites that implemented prevention and control measures based on local data for at least one epidemic prone disease

Has the health facility implemented prevention and control based on local data for at least one epidemic prone disease?

Yes No Unknown Not applicable

31. Percent of sites that achieved acceptable case fatality rates during the most recent outbreak

Obs observed that the health facility achieved an acceptable case fatality rate for most recent outbreak

Yes No Unknown Not applicable

VII. Feedback

32. Percent of sites that have received a report or bulletin from a higher level during the past year on the data they have provided

How many feedback bulletin or reports has the health facility received in the last year? ____

Obs Observed at least 1 report or bulletin at the health facility from a higher level during the past year on the data they have provided

Yes No Unknown Not applicable

33. Percent of health facilities that conducted at least semi-annual meetings with community members to discuss results of surveillance or investigation data

How many meeting has this health facility conducted with the community members in the past six month?

Obs Observed the minutes or report of at least 1 meeting between the health facility team and the community members within the six months

Yes No Unknown Not applicable

VIII. Supervision:

34. Percent of individuals supervised in the past 6 months

How many times have you been supervised in the last 6 months? _____

Obs Observed supervision report or any evidence of supervision in last 6 months

Yes No Unknown Not applicable

35. Of those supervised in the previous 6 months, percent of individuals for which the supervisor from the next higher level reviewed surveillance practices appropriate to their level

Obs observed supervision reported or any evidence for appropriate review of surveillance practice

Yes No Unknown Not applicable

IX. Training

36. Percent of health personnel trained in disease surveillance and epidemic management

Have you been trained in disease surveillance and epidemic management?

Yes No Unknown Not applicable

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

X. Resources

38. Percent of sites that have Logistics

a. Electricity c. Motor cycles

b. Bicycles d. Vehicles

39. Data management

a. Stationery d. Software

b. Calculator e. Printer

c. Computer f. Statistical package

40. Communications

- a. Telephone service c. Radio call
- b. Fax d. Computers that have modems

41. Information education and communication materials

- a. Posters e. Generator
- b. Megaphone f. Screen
- c. Flipcharts or Image box g. Projector (Movie)
- D.VCR and TV set h. Others

42. Hygiene and sanitation materials

- a. Spray pump b. Disinfectant

43. Protection materials (list) _____

XI. Satisfaction with surveillance system

44. Satisfaction with the surveillance system

Are you satisfied with the surveillance system?

Yes No Unknown Not applicable

45. *If no*, how can the surveillance system are improved? _____

46. Opportunities for integration what opportunities are there for integration of surveillance activities and functions

Chapter 4 - Health Profile Description Report

Dubti District Awsa Zone, Health Profile Assessment Report 2014/2015

Abstract

Introduction: Health profile description is a system of collecting, organizing and summarizing health and others health related events to describe health and others health related conditions.

OBJECTIVE: - To assess and describe current health profile of Dubti district afar, Ethiopia May, 2015

Methods: we conducted a cross-sectional descriptive study in Dubti District, Awsa Zone-April, 2015. We used Interview and standard check-list to collect health and other health related data from the district offices: Health, Agriculture and Rural Development, Water, Education, Culture and Tourism, and other sector offices of the district.

Results: Dubti District was established in 1999 and 657 kilometers away from Addis Ababa. It has 14 rural, and 1 urban. The projected population of the district for 2015 was 78883 of which 37075 (39%) were females. Around 79% of the populations were living in the rural areas. Dubti District has 15 primary schools and one secondary school. Total of 6808 students were enrolled to school with nearly equal ratio of (1:1) male to female in 2014/15. Primary health care coverage was 67% with 14 Health Center, 18 Health Posts, and 1 referral hospital. Malaria were the leading cause the last three consecutive years (2013_2015) of morbidity and admission which accounts for 22.47% of top ten adult OPD visits as well as (under 5 year) OPD ranking (21%) in children. Low ITNS distribution coverage was 62% and the utilization coverage was not assessed in the whole kebeles.). Severe malnutrition was 3rd causes of admission and series problem in the district. An estimated TB prevalence was 101/100,000 population and national indicator's of TB data were missing

Conclusions: Malaria was being the leading cause the last three consecutive years of morbidity and admission of top ten adult OPD visits as well as (under 5 year) OPD ranking in children. Low ITNS distribution coverage and the utilization coverage were not assessed. An estimated TB prevalence was 101/100,000 population and national indicator's of TB data were missing.

We recommend proper malaria preventive measures distributing INTs, TB- national indicators record, malnutrition health education, and find way to prevent future attack by flood of Dubti

Key words: District Health profile, Dubti District, Awsa Zone, Ethiopia

Introduction

Health Profiles provide a summary of health information to support mint. Health Profiles is a programmed to improve availability and accessibility for health and health-related information. The profiles give a snapshot overview of health for each local authority. The health and wellbeing of any population requires a holistic approach that includes the involvement of many agencies and gives ownership to the communities involved. The traditional notion of top-down delivery of health care is no longer acceptable to central governments, who are seeking greater value for money. The increasing return to the principles of public health signifies that a purely medical approach to health cannot by itself resolve the many health problems in increasingly complex cities. Government health strategy documents increasingly recognize the importance of the views of the people receiving services in needs-based service delivery and espouse the involvement of individuals and communities as a key objective in the future delivery of health services. Health related data and important health related indicators to describe the health and related social, economic, political and cultural factors in the geographic area under discussion. Currently, the concept of health as defined by the World Health Organization (WHO) is —a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity. Taking this perspective, one moves beyond disease absence as defining health status to one that incorporates the complex perceptions about health and health conditions. Health Profiles are about the health of people and about the conditions in which they live. It is essential tool for change and thus must be an integral part of local decision-making and strategic planning processes. The preparation of profiles provides a lively, scientifically and evidence based account of health in the district; it can stimulate public interest and political commitment; and it can identify targets for the future and monitor progress towards them. The health profile description highlights several important aspects of public health data. Data was collected, analyzed, and will disseminate for decisions on the best information available. Demographic, infrastructure of the district, socio-economic, primary health care coverage, vital statistics and

other data was collected and to address important public health problems and to facilitate effective public health actions. District health data are important for advocacy, program planning, implementation and evaluation of health care most importantly, at the district level. Based on the decentralization structure of Ethiopia, districts are the basic units of planning, decision making, and political administration. The purpose of this project is to assess and describe the health profile of Dubti district, Afar region which will be help for understanding of the health problem and use it to address the current gaps for program planning, priority setting and intervention.

Rationale of the Study:

Health profiles in which official statistics, both demographic and health indicators are supplemented by interview-based survey data provide an important baseline for future dialogue about the health and social circumstances of the people in a district. The process of conducting a profile encourages debate and raises awareness among administrations members about factors that influence the positive aspects of health. It provides a mechanism for statutory agencies to develop a community participation strategy and for interagency cooperation. Health profile is important for prioritizing health program and health related problems of the community at any level. So far in our country, it is not familiar to find prepared district health profile even though basic for planning and for appropriate intervention; and is an entry point for operational research. As we know many Stake holders were working on health and they may need compiled health and health related issues health profile but due to lack of this information they made their project intervention haphazardly. Therefore this project work hopefully makes access of compiled health and health related issues of the district for planning, prioritizing health program and health related problems.

- ✓ It provides better information on local health care needs; the process facilitates more coherent and effective delivery of health care.
- ✓ It facilitates a more democratic approach to health needs assessment in keeping with central government policies.
- ✓ It facilitates understanding by local residents that services have limitations and resources are finite.
- ✓ It results in empowerment of local administration.
- ✓ A bottom-up approach is more sustainable than an imposed structure of consultation.

Objective

General objective

To assess and describe current health profile of Dubti district afar, Ethiopia May, 2015

Specific objective

- ❖ To assess health and health related indicators of the Dubti district.
- ❖ To describe existing health infrastructure of the district.
- ❖ To assess primary health care coverage of the district.
- ❖ To find out endemic diseases as well as its control and prevention program in the district.
- ❖ Compile and simplify complex health information of Dubti

Methods and Materials:-Health and others health related data was collected Dubti district on April 2015. Different health profile reports were assessed including afar regional health bureau's (ARHB's) profile. Different instruments like checklists and structured questionnaire were used as tools for data collection from various governmental organizations such as district health office, health facilities, education sector, finance office, agriculture sector, district water resource office, district electric power authority and district political administration office. Concerned health office heads, experts, health professionals of various disciplines and heads and experts of other sector offices were interviewed and examined posted charts on the walls of the office for a list on top causes of morbidity, mortality, organizational structure and others were evaluated. We reviewed annual reports of the relevant sectors that have sent to the region.

Results

Historic Aspects and Establishment of Dubti District has been established as an independent district in 1999 which was earlier merged with other districts Kori, and Semera-Logiya District. The name Dubti has come from, Afarish word meaning "Always Full of flood"

Geography and Climate:-Dubti is one of the eight districts found in awsa zone of afar Region. The climate varies from semi-arid months of rainfall, about two months, to dry seasons of, 10 months with an overall average minimum and maximum temperature of 42.2°C and 24.7°C,

respectively, and total average rainfall ranges 0-2.5 mm/month. All of the district area accounts lowland. The distant is 10 and 657 kilometers far from Semera and Addis Ababa (capital city) respectively. It is bordered by Semera to the North, kori and Aysaita to the East, Mille to south and bounded by logia in the western part.

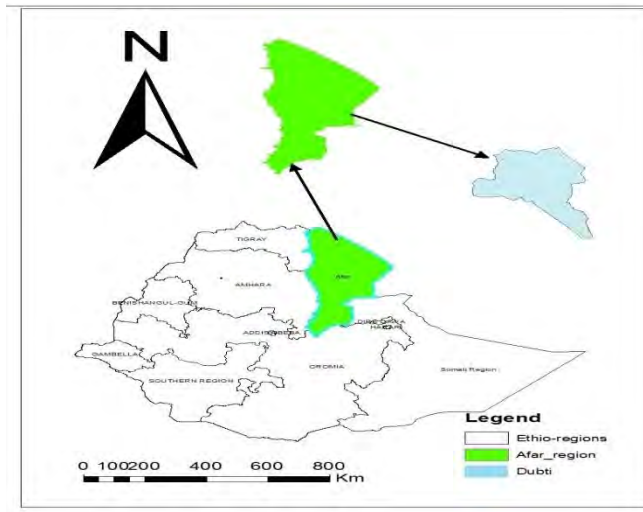


Figure 2. 11T Map of Dubti District, Afar Ethiopia, 2016

Administrative and Political Structure

Dubti district has 14 rural and 1 urban kebeles with all sector offices concentrated in Dubti which is the capital of the district. All the sector offices of the district are responsible for the Awsa Zonal administrative office. There are two supporting NGOS working together with district health office namely Kelam and HAPCO. This NGOS mainly support the wereda on HIV/AIDS and educations.

Demographic Information

Dubti has a total estimated population of 78883 with 4808(61) %males and 37075(39%) are females on 2015 projected from the 2007 population and housing census. From the total population under one years old children constitutes 2288 (29%), under five 7936(10.06%), women of child bearing age 18009(22.83%) and pregnant women are 2264 (2.3%). From the total population segment 62300(79%) lives in rural part of the district. The annual growth rate is considered to be 2.5% per annum, Average fertility rate was 5.9 children per women in life during her reproductive ages and average house hold size was 13839(5.7) per house hold.

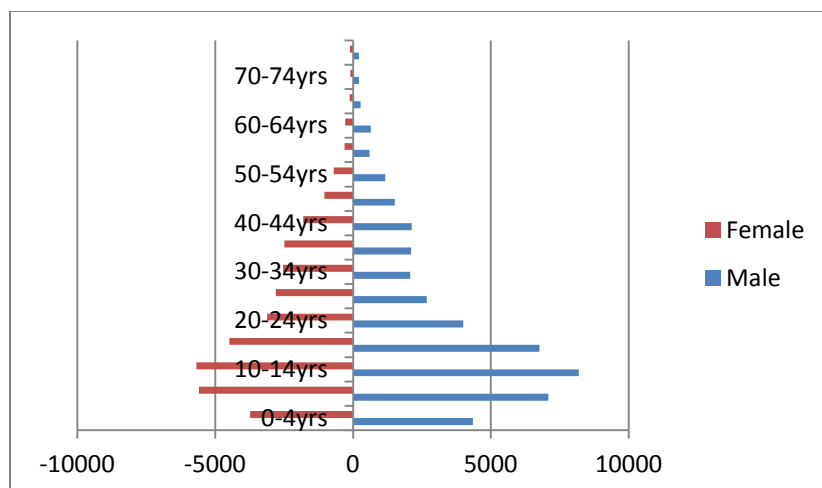


Figure 2.12 Population Pyramid of Dubti District, Ethiopia, 2014/15.

Ethnic Compositions Afar ethnic is the majority in the district and it constitutes 95 % and the other 5% constituted other ethnic groups. Afar/Afresh language is the dominant that most people speak it and it is the official language in the district.

Productivity and Income The rural agro-postural community income is based on agricultural products and catels, Camel, cows, maize and others are the commonly cultivated crop products in the district. An estimated more than half of land is used by govt; which is owned by Government investment) and is called Tendaho sugar factory.

Education and School Distribution

Dubti district has a total of 16 schools; of these 15 primaries and one secondary school exist with a total of 6808 students enrolled in 2015. Females account 41% of the total students enrolled. From a total of 5211 (42%) in elementary and 603 (37.8%) in secondary schools were females. A total of 262 teachers were registered, most (87%) were males. Only two schools have access to pipe water, 2% latrine coverage but 98% of them were not a standard latrine it serves for temporary purpose only. All the schools (15 elementary and 1 high schools) have Anti HIV/AIDS clubs.

Infrastructures (Public Service Facilities)

Communications

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

Transportations the only two kebeles have road accesses but other kebeles don't. Regarding health facilities 12 Health Centers have roads and 5 of Health Posts have accesses to the road.

Water Supply In Dubti District a total 16,583 (21%) of the population in all town kebeles and 2 rural kebeles have potable water supplies. In the district there are 7 deep well that serve 8 kebeles, 11 kebeles have spring water. The total water coverage was 60% by kebeles in 2014/15, this includes that, 2 HC and 5 HPs health facilities have water supply

Energy Supply Electric Power is the main sources in the district. In Dubti District 1 town kebeles and 3 rural kebeles have 24 hours electric power supply with this 26,694(34. %) of the population. Among rural 16,583(21%) and urban population were 10111 (13%). The rest 8 rural kebeles (66%) don't were using energy

District Health System

Organization of Dubti District Health Office (Organ gram)

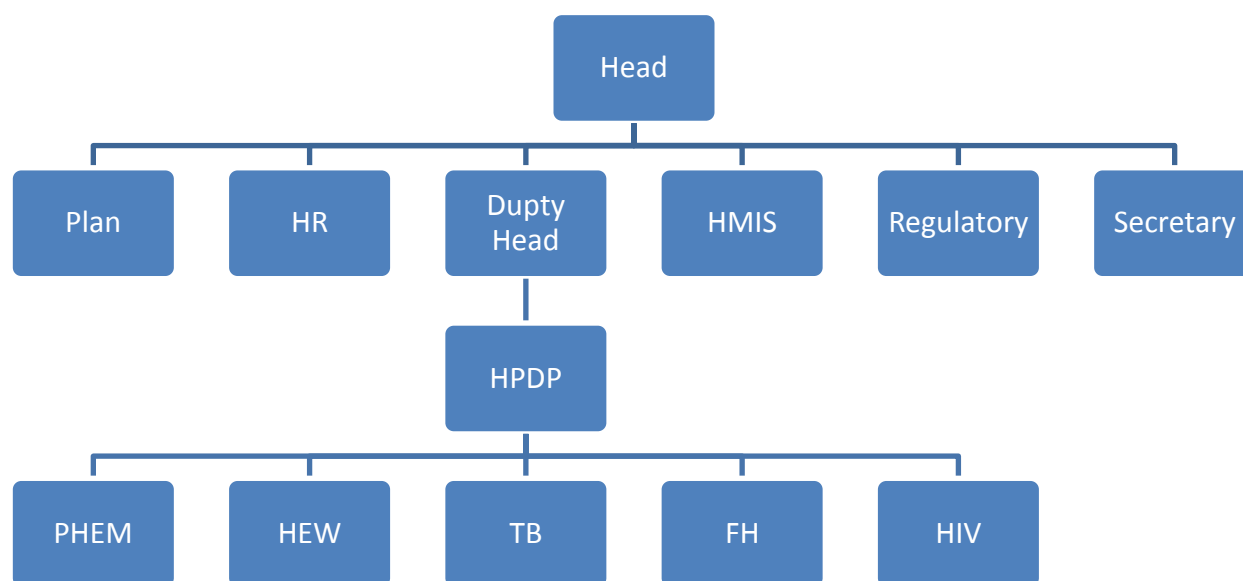


Figure 2. 13 Oregano-gram of Dubti District, Ethiopia, 2014/15

The district has 14 health centers and 18 health posts; with ratio of 1:56341 health center to population ratio and 1: 4383 health posts to population ratio. Health center coverage was above 100% and health post 100%; with the ratio of 1:78883, 1:3586 and 1:3034 health officers, nurse, HEW to population respectively. When we see the availability of telephone service, water and

electric power supply in the health facilities; none of centers and health posts has either wireless or cable based telephone services but mobile telephone works at all health facilities. 11 out of 14 health centers, 13 out of 18 health posts and one referral hospital have 24 hour electric power supply. Even though public bus transportation is available in the 3 health centers and one hospital, transportation for the rest 11 health centers and the whole health posts are possible for small cars and motor cycles.

Health Indicators and Vital Statistics Health indicators and vital statistics are important for estimation of the district's or country's development.

Table 1.2.8 Distribution of vital statistics in Dubti District, Ethiopia, 2014/15

S/N	Indicators	Number	%
1	Total population	78883	100
2	Male	41808	53
3	Female	37075	47
4	Under 1 years old	2122	2.69
5	Under 5 years old	7936	10.06
6	Women 15- 49 years old	17985	22.8
7	Pregnancy women	2288	2.9
8	Urban	16583	21
9	Rural	62300	79
10	Total live births	2119/1000	2.9
11	IMR	No data	
12	Under 5 MR	No data	

Mothers and Child Health Services

Immunization Status Both static and outreach immunization services was conducted in 2014/15. Of 2122 targeted population, immunization coverage for children under one years of age was 60% for BCG, 89% for Penta 1, 81.2% for Penta 3, and 98.07% for measles and 62% fully vaccinated respectively.

Table 1.2. 9 Immunization status of Dubti District, Ethiopia, 2014/15

Sno	Type	Coverage %
1	Pentavalent1	89
2	Pentavalent3	81.2
3	BCG	No data
4	Measles	98.07
5	Polio	No data
6	Full imm.coverage	No data

Mothers Health Services

The ANC achievement of the first 3 quarters in 2015 on the four times visit was 70.3%.The post natal coverage of the wereda was 50% and proportion of skilled delivery was 51.1%.

Sanitation and Hygiene

The drinking water coverage of the district was 60%, latrine utilization rate 3.4 and the latrine service coverage was 16.8%. Data for type of latrine type is not available.

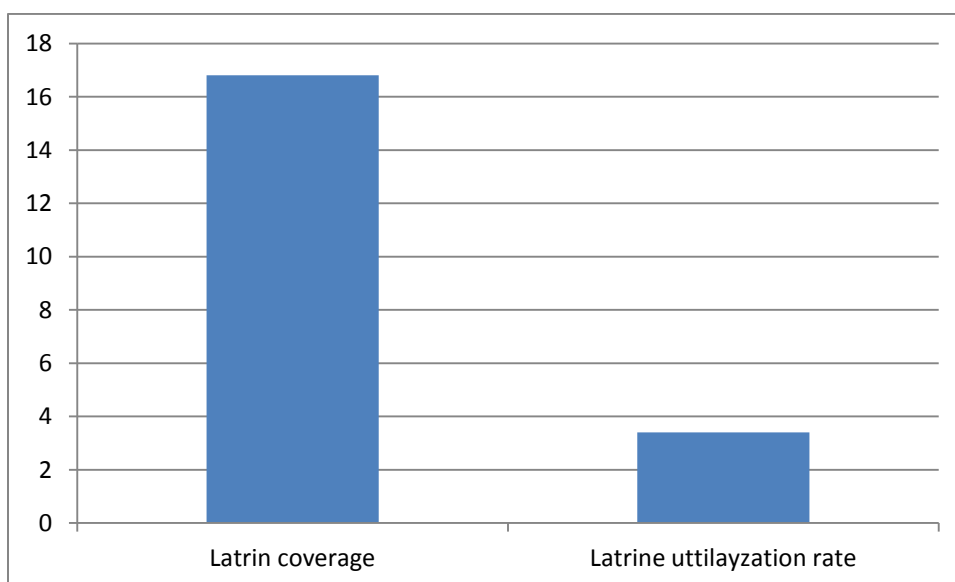


Figure 2. 14 Latrine coverage and utilization of Dubti District, Ethiopia, 2014/15

Health Education Health education was provided for a total of 18,934 people or 2321 households on different health issues like environmental sanitation, PMTCT, FP, ITNs utilization, and others public health concerns in 2014/15.

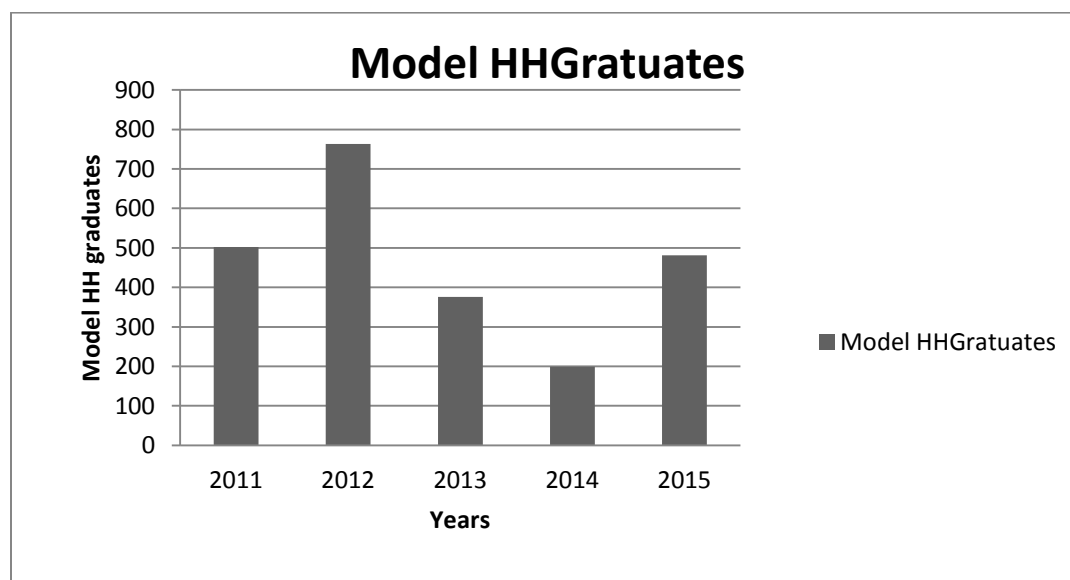


Figure 2. 15 Model HH graduates of Dubti District, Ethiopia, 2011-2015

Morbidity (Out-Patient and In-Patient) Malaria all type 1850 (22.47%) followed by AFI 1458(17.66%), and Dysentery 1029(13%) were the top three causes morbidity in adults outpatient department visit in Dubti District 2014/15.

Regarding under five outpatient visit malaria 1121(21%) followed by AURTI 1100(19%), and Malnutrition were the top three causes of morbidity in under five children outpatient visit in Dubti District in 2014/15. Malaria was the leading causes of admission that accounts for 82% of overall admitted cases followed by AURTI 45%.

Table 1.2.10 Top ten causes of morbidity in adult and under 5 OPD in Dubti District, Ethiopia, 2014/15

Adult			Under 5			Adult		
Rank	Diseases	%	Rank	Diseases	%	Rank	Diseases	%
1	Malaria	22.47	1	Malaria	21.8	1	Malaria	21.8
2	AFI	17.66	2	AURTI	18.6	2	AURTI	18.6
3	Dysentery	12.47	3	Malnutrition	13.1	3	Malnutrition	13.1

4	NBD	11.68	4	Pneumonia	12.00
5	Pneumonia	11.15	5	NBD	11.2
6	Helmets/parasites	10.32	6	Dysentery	9.1
7	AURTI	5.73	7	Helmets	7.5
8	Acute bronchitis	4.92	8	Malaria	2.9
9	Typhoid fever	2.05	9	Typhoid fever	2.5
10	Other	1.61	10	Other	1.9

Endemic Diseases

Malaria is endemic in the district throughout the year. The whole kebeles of the district are malarious in which the total population is at risk of being infected by malaria. In the last three years the highest number of malaria cases (2450) was reported in 2014. The District Health Office has applied insecticide treated bed nets (ITNs) distribution was conducted and the ITNs coverage is 62% in Dubti District in 2014/15. Annual Incidence per 100,000 population at risk was (2345/100,000 population) and prevalence of 7% 2014/15.

The dominant species of malaria parasites was *P.falciparum* (54%), *P.vivax* (45%), and 1% were mixed species of plasmodium .There was no shortage of anti-malaria drugs to treat malaria cases

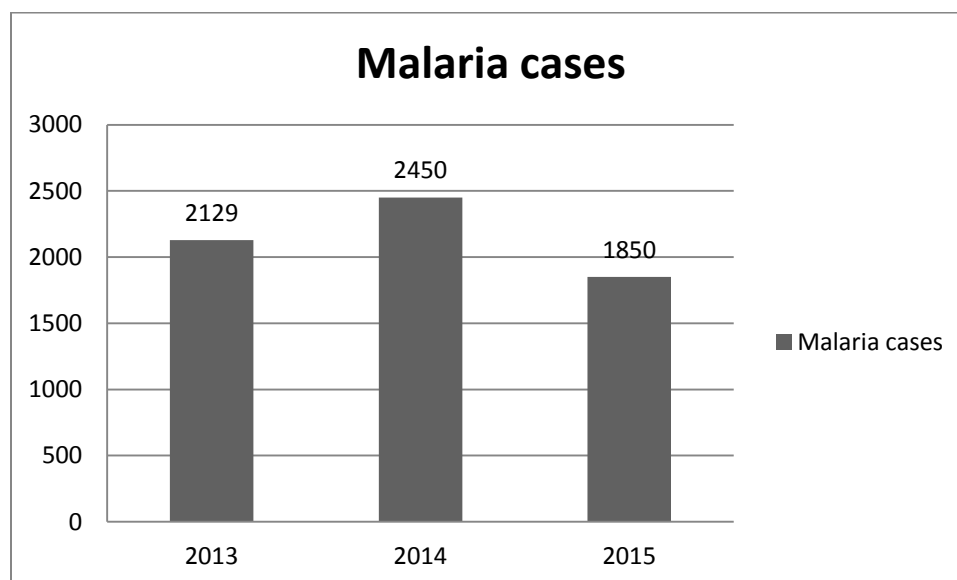


Figure 2. 16 Trends of malaria cases over time in Dubti District, Ethiopia, 2012-2015

Tuberculosis (TB), and Leprosy A total of eighty (80) tuberculosis (all forms) cases were reported to the district in 2014/15. From the total all forms of TB cases, 19 pulmonary tuberculosis (PTB) negative, 50 PTB positive, and 1 were extra PTB.

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

A total of 1857 clients were screened for HIV antibody tests in VCT, PIHTC and PMTCT testing point in different health facilities in the district, of these 5,500 were male while the rest 4500 were female. From all HIV rapid tests screened clients 385 were positive for HIV antibody tests from these 200 were male, and 185 were female subjects. Majority of the screened cases were with age greater than 25 years old. HIV prevalence and incidence was 1.8% and 0.49% respectively in the district's general population.

Nutritional Status of the District There was 15 outpatient treatment program (OPT) sites, and 5 stabilization center (SC) in the district in 2014/15.

Disaster Situation in the District There was no devastating disaster in the district in the last three years but, in 2014 there was 1 times flood hit a total of 11 Kebeles the District Disaster Preparedness Prevention and Relief (DPPR) Office in collaboration with the regional DPPR Office and other stakeholders was playing role in resettlement of the affected population.

Budget Allocation for Health Sectors In 2014/15 the budget allocated for health activities (all kinds of activities) from Government Finance and NGOS.

Human Resources for Health Facilities There are a total of 79 staffs working in government health sector in which all health facilities were staffed with all types of professionals and each facility has their own communication system with the district health office.

Table 2.11 Human resources working in Dubti District health system, Ethiopia, 2014/15

Profession	Male	Female	Total	Specificat	Health worker: population ratio
Physician	0	0	0		No

Health officer	1	0	1		1:78883
Laboratory Technician/technologist	0	0	0		No
Nurse	20	2	22		1:3586
Pharmacy technician/pharmacist	1	0	1		1:7883
X-ray technician	0	0	0		No
Midwife	0	0	0		0
HEW	0	26	26		1:3331
ENHS	1	0	1		1:78883
Supportive	21	7	28		1:2817
Total	44	35	79		1:999

Discussion Malaria were the leading cause the last three consecutive years (2013_2015) of morbidity which accounts for 22.47% of top ten adult OPD visits and as well as (under 5 year) OPD ranking (21%) in children. but, there was no death due to malaria this might be explained as improved health service and low 52% ITNs distribution not known utilization rate in the district may be risk in of suffering from malaria, but still needs to encourage utilization of ITNs for its better reduction of morbidity. Malaria was the leading causes of admission (82%) in the district this might be due to that people leaving in endemic area as well as there were many

breeding sites of malaria since there is largest sugar factory and nearby Awash River flows through out the year. In 2014/15 a total of 81 all forms of TB cases diagnosed and reported to the district District health office with an estimated TB prevalence of 101/100,000 population. This is less than national prevalence 258/100,000 population for all forms of TB [2, 3]. Vaccination is one of the strategies used to reduce childhood morbidity and mortality. The vaccination indicators PV3, PV1, and measles vaccination coverage was achieved which is within optimal standard recommended by WHO as well as national immunization guideline. This vaccination coverage should be encouraged and acknowledged to improve child health. ITNS distribution coverage is 52% but the utilization coverage is not assessed in the whole kebeles. The overall provision of safe water supply was improved to 60% in the district this shows regional and wereda given attention to access of drinking water. The ANC achievement of the first 3 quarters in 2015 on the four times visit was 70.3%. The post natal coverage of the wereda was 50% and proportion of skilled delivery was 51.1% which was lower than with than the HSDP-IV target [1, 2].

Limitations

TB-national indicators, have no data during study period and missing of some vital statistics data (IMR, Under 5 MR). There was also not enough literature about district health profile description and data incompleteness.

Conclusions;-Malaria were the leading cause the last three consecutive years (2013_2015) of morbidity and admission which accounts for 22.47% of top ten adult OPD visits as well as (under 5 year) OPD ranking (21%) in children. Low ITNS distribution coverage was 52% and the utilization coverage was not assessed in the whole kebeles.). Severe malnutrition was 3rd causes of admission and serious problem in the district. An estimated TB prevalence was 101/100,000 population and national indicator's of TB data were missing.

Recommendations

1. since malaria was being endemic, leading morbidity and admission in the study area. A far regional health office, stakeholders (Tendaho -sugar factory) and the district should encourage to malaria preventive measures distributing ITNs to the community, through HEWs and community.

2. TB- national indicators should be record in the district. Malneutrion was 3rd cause of OPD so, health education, and CMAM encourage through health professionals.
3. Flooding was the prone to Dubti district every year; the district, Tendaho-sugar factory and Regional administration should find way to prevent future attack by flood.
4. Further study on ITNs owner ship and utilization of the study area.

Reference

1. CSA. Ethiopia Demographic and Health Survey (EDHS)-2000, 2005, 2007 and census 2011 report
2. FMoH, Health sector development program (HSDP IV), Ethiopia, for 2010/11-2014/15.
3. FMoH, Guidelines for clinical and programmatic management of Tuberculosis, Leprosy and TB/HIV in Ethiopia, 5th Editions, March, 2013.

Annex IV – Health profile data description of Dubti District Afar Regional State, Ethiopia, April 2015

1. Historical

- Wereda Name
- How and why the name given [1].
- Any other historical aspect about the Wereda
- Administrative towns
- Kebeles
 - Rural
 - Urban
- Council
- Representative for federal parliament [2].
- Sectors and ministry office, where they found
- Main supporting organizations

Geographical coordinate

- | | |
|------------------------------|---|
| • Latitude | East_____West_____ |
| • Longitude | _____ |
| • Annual Rain Fall (average) | • Map of the zone |
| • Climatic | |
| zone_____ (%)_____ | • Culture |
| _____ (%)_____ (%) | • Main transport and how they connected each weredas, kebeles and with the capital city of the zone |
| • Wereda boundaries | • Telephone, mobile and internet |
| North_____ | • Electric city |
| South_____ | |

3. Demographic Data

- **Population**

S,No	Kebele	Sex		Total	Ser. No	Kebele	Sex		Total
		Male	Female				Male	Female	
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
Total					Total				

Population distribution

Se.No	Description	Total Population	%	Remark	
1	Male				
2	Female				
3	Urban population				
4	Rural Population				
5	Under 1 year				
6	Under 5 year				
7	5-15 year				
8	15 -49				
9	6-59 month age group				

10	24-59 month age group				
11	Pregnant women				
12	Non pregnant women in reproductive age				

4. Population pyramid															
Population data by age and sex															
Male	<5	5_9	10_14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	>64	Total
Female	<5	5-9	10-14	15-19	20-24	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	>64	
Total															

Characteristics	Frequency	Percentage
Ethnic/language		
Afar		
Amhara		
Tigray		
Waleyta		

Others		
Religion		
Orthodox		
Muslim		
Protestant		
Others		
Occupation		
House Wife		
Student		
GOV employment		
Merchant		
Others		
Water Source		
Pipe		
River		
Wale		
Others		

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_____ (#)
- Government Employer_____ (#)
- Private Employer_____ (#)
- Daily Laborer_____ (#)
- Different business_____ (#)
- Jobless _____ (#)

- **Average** _____
Income_____

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

6. Educational Status

School Enrolment	Sex			
	Male		Female	
	Frequency	Percentage	Frequency	Percentage
Illiterate				
KG				
1_8				
9_12				

TVT				
Collage/University				
School Age Children (target)				
School dropout in 6 months or year 2007 EFY				

Literacy status_____

< 15 years_____

>64 years_____

- Education
 - Universities.....No of students...
 - High Schools.....No of students
 - Primary schools_____
 - Drop out.....% compare with the previous year% and means of drop out
 - Enrolment compare with the previous year

7. Water coverage

Characteristics	Frequency	Percentage
Total safe water coverage		
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 wereda

- Was there any disaster (natural or manmade) in the wereda in the last one year? _____
- Any recent disease outbreak/other public health emergency _____
- If yes cases _____ and deaths _____

9. 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 1st ANC) _____
- ANC rate (how many of the total expected pregnancies attended 4th ANC) _____

- Percentage of deliveries attended by skilled birth attendants _____
- Percentage of deliveries attended by HEWs _____
- Percentage of deliveries attended by TBA _____
- Average family size _____

10. Immunization Coverage

Type of Vaccine	Vaccination Status			
	Zero dose	1 st dose	2 nd dose	3 rd dose
BCG				
OPV				
Penta				
Measles				
PCV				
TT2				
Rotarix				

11. Health facilities

Ser.No.	Type of Health facility	Number		HF: Population Ratio	Total Number of beds	Remark
		Governmental	Non-governmental			
1	Hospitals					

2	HC					
3	HP					
4	Dxic laboratory					
5	Clinics					
6	Higher private clinics					
7	Medium private clinics					
8	Small private clinics					
9	Pharmacy					
10	Drug store					
11	Rural drug vendor					

Human resource distributions

Se.No	Profession	Number		Total	HP:population Ratio	Remark
		Male	Female			
1	Specialist					
2	GP					
3	HO					
4	Nurse BSC					
5	Clinical nurses					
6	Ophthalmic nurse					
7	Public nurse					

8	Ophthalmic nurse				
9	Midwife BSC				
10	Midwife diploma				
11	Lab. Technology				
12	Lab. Technician				
13	Pharmacist				
14	Pharmacy technician				
15	Environmental HO				
16	X-ray technician				
17	Anesthetist				
18	Health assistance				
19	HEW				
	Total				
	Supportive staff				

12. Top causes of morbidity and mortality

Top ten leading causes of OPD visit (morbidity)

Adult		Pediatrics/ < 5 years
1		
2		
3		
4		

5		
6		
7		
8		
9		
10		

Top ten causes of admissions (Morbidity)

Adult		Pediatrics/ <5 year
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

Top ten causes of deaths (mortality)

Adult		Pediatrics/ <5 year
1		
2		
3		
4		
5		
6		

7		
8		
9		
10		

13. Health budget allocation

Government

- Total budget allocated for the wereda _____
- Total budget allocated for health _____ (____ %)

Funds from NGO

- Total _____ (purpose/programs)_____

14. Community Health Services

Status of services provided by community health workers namely:

- No. of TBAs/TTBA _____ and their responsibility
- No. of CHWs/CHPs _____ and their responsibility
- Number of HEWs _____ Responsibilities _____
- Others _____

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

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

Serial	Indicator	Total Number
--------	-----------	--------------

No.		
1	Number of ANC Cases Registered	
2	Number of pregnant provided TT2 Immunization	
3	PNC cases visited	
4	Number of children <1year receiving DPT immunization	
5	Number of children <5 year treated for diarrhea at public HF	
6	Number of children <5 year treated for pneumonia at public health facilities	
7	Number of facilities reporting stock out of contraceptive commodities	
8	Total deliveries conducted by skilled attendants	
	Number of live births	
	Number of still births	
	Total obstetrics/Maternal/deaths	
	Total Newborn deaths	

Family Planning Methods

Methods	Frequency	Percentage
Oral Contraceptive		
IUD		
Implant		
Injection		
Condom		

Is their EPI (outreach service?)

- Yes
- No

Conduct cold chain or vaccine management supportive supervision

- Yes
- No

If yes, do you have checklist?

- Yes
- No

Environmental Health and Sanitation

- Latrine coverage _____ & utilization rate _____

Type of Latrine

Type of Latrine	Frequency	Percentage
Open field		
Pit Latrine		
Ventilated Pit Latrine		

Others		
--------	--	--

Solid waste management

Is their solid waste container?

- Yes
- No

Is their solid waste container loader?

- Yes
- No

If yes, frequency of solid waste collection_____

- Liquid waste management _____
- others _____
- Health Education (what, when, where, how and who conducted health education)_____

16. Endemic diseases

Malaria:

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

TB/Leprosy:

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

HIV/AIDS

- Total people screened for HIV (last one year) _____
- VCT _____ PITC _____ PMTCT _____
- HIV prevalence _____
- HIV Incidence (new cases/yr) _____
- Total PLWHA _____
- On ART _____ on Pre-ART _____

- Other HIV prevention activities_____

Nutrition

- Total Out Patient Therapeutic Program (OTP) sites_____, total admissions to OTP/yr_____
- Total SC sites,_____, Newly opened/yr_____, total admissions to SC/yr_____
- Is there TSF (targeted supplementary feeding) program in the wereda_____
- CBN program_____ PSNP_____ other_____

17. Essential drugs (shortage)

18. Epidemic born disease_____

What do you think the main problems of the district are?

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

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

Chapter V- Scientific Manuscripts for Peer reviewed Journals

LOUSE BORN RELAPSING FEVER OUTBREAK INVESTIGATION IN MEKELE-CITY, TIGRAY REGIONAL STATE, 2016

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Abstract

Background: Louse- borne relapsing fever is an acute febrile illness caused by *Borrelia recurrentis* and is transmitted by body lice, *Pediculus humanus corporis*. In February, 2016 a LBRF outbreak was reported from Mekele and we investigated the outbreak to confirm it, identify risk factors, and implement public health control measures.

Methods: matched/individually case- control; cross-sectional investigation was conducted from 8th -25 Febroure-2016 All cases 21(100%) were reported from Mekele and a predesigned questionnaire was used for data collection .Data was checked for completeness, coded and analyzed using SPSS version 21. $P < 0.05$ was considered significant for comparison

Results: We identified a total of 21 LBRF cases and no deaths (CFR=0.0%) mean age 16.9-year [ranging: 15 - 20-year]. All cases 21(100%) were males street or homeless with overall AR=8/100,000 Population. Multivariate analysis showed that more than six people or mass sleeping [Adjusted Odds Ratio [(AOR) =15.96, 95% CI (4.793_60.155)] with P-value 0.002 were independent risk factors for LBRF among streets males in Mekele-city

Conclusions: In Mekele, LBRF is still an important health problem. Poor personal hygiene among street, overcrowding (close contact), not taking bath and lack of alternative clothes might contribute to increase the magnitude of the outbreak. Therefore, health education should be delivered towards LBRF prevention in the city.

Key words: Louse- borne relapsing fever, Mekele-city, Ethiopia

Introduction

Relapsing fever (RF) is a vector borne disease caused by *Borrelia* species (body lice in case of louse-borne relapsing fever (LBRF)) and soft ticks in case of tick-borne relapsing fever (TBRF). This acute febrile illness presents with recurrence of characteristic febrile periods lasting for days alternating with afebrile periods [1]. The main manifestation is a recurring fever which coincides with massive numbers of bacteria in the blood and severity ranges from asymptomatic to fatal [2,3]. Louse-borne relapsing fever has been restricted to countries with poor socio-economic status, the most important foci being Burundi, Rwanda and Ethiopia. *Borrelia recurrentis* is the etiologic agent for louse-borne relapsing fever and occurs as epidemic under conditions of overcrowding, poverty, draught and famine. Homeless people in crowded shelters are also at risk of louse-borne relapsing fever [4, 5]. Large outbreaks of louse-borne relapsing fever had occurred throughout the past century. These outbreaks usually occur following man-made breakdowns in public health, as typified by the epidemic following World War II that involved about 10 million cases and one million deaths during this epidemic [4]. Currently, epidemic relapsing fever is found only in Ethiopia and neighboring countries, although its occurrence among homeless people of industrialized European cities has been suspected but not confirmed. Famine, war, and the movement and groups of refugees often result in epidemics of louse-borne relapsing fever [6,7]. Ethiopia is the main endemic focus of louse-borne relapsing fever. It was reported as seventh of the top ten leading causes of admission and death among adults in the country, in 2002/03. More than 9000 cases were reported to the ministry of health in the same year. However, lack of diagnostic facilities in rural health set up and incomplete reporting make it difficult to estimate the total number of cases [4,8]. Several large epidemics were recorded in the country, usually following war and famine. Localized epidemics continue to occur when circumstances become favorable. The latest epidemic occurred in 1991/92, at the end of the civil war in Ethiopia. It occurred among military recruits returning to their residence areas, and later spread to different sections of the community, including schools. Among 389 patients from Arsi, southern Ethiopia, during this epidemic, the case fatality rate was 3.5 % [4]. Infestation was more frequent in high lands where people bathe and wash clothes less frequently, and use more bedding. A more recent study of prevalence of lice infestation among school children showed that 66.8% of the students harbored body lice. The prevalence was significantly higher in Debre-Berhan, 76.4%, at an altitude of 2850 meters, compared to

Gambella, 60.3%, located at an altitude of 485 meters above sea level. In urban areas, the disease occurs mainly among jobless migrants, daily laborers, prisoners and the poor [4]. The aim of investigation was to investigate the occurrence of relapsing fever outbreak to characterize it, identify risk factors, and implement public health control measures.

Methods

Study area

The outbreak investigation was conducted by using line lists from Mekele health center in Mekele started on 8-25 Feb, 2016. Mekele-city administratively divided in to seven sub city, one referral hospital, five general hospitals and seven health centers with potential health service coverage of 100%. Mekele city has projected total population of 267,350 for 2015/16.

Study design and period

Individually matched case control (1:2) investigation was conducted twenty one cases matched with forty two controls that had no previous history of relapsing fever living in the same village as the cases. Cases and controls were matched by age, and sex to control the effect of confounding variables that could distort the true association between the exposure and the outcome. Line list of cases was taken and followed daily within the study period, cases and controls interviewed using semi-structured questionnaire, their sleeping spaces were observed and all information hypothesized as risk factors for the relapsing fever outbreak was collected. The study unity was all patients with louse born relapsing fever cases /death come to health facilities and fulfills the case definition/confirmed cases of louse born relapsing fever in affected kebeles of Mekele.

Data collection

Data was collected with line list, checked for completeness, coded were entered and analyzed using SPSS version 21, Epi Info Version 7.1.3.0 and Microsoft Excel 2013. Results were presented using descriptive table, chart and spot map. Attack rate, $P < 0.05$ and 95% confidence interval (CI) for odds ratio (OR) were used in deciding the significance of the associations. Observation of sleeping space and case management; and purposively selected key informant; Surveillance focal person and community leader interview at all levels and discussion on health seeking behavior with community. Cases were defined using WHO standard louse born relapsing fever case definition, for analytic analysis 21 LBRF cases and 42 controls were interviewed using standard questionnaire that includes; socio-demographic, Knowledge to disease, exposure, and

risk factors were included. Active case search was conducted, and mass screening of BF was done. Discussion were conducted with the Zonal Health Office, District Health Office, district health personnel, polices, community members, and the district administrative cabinet both prior and exit of the investigation.

Case Definitions

Suspected case:-Any person presented with an abrupt onset of rigors with fever, usually remittent, headache, arthralgia and myalgia, dry cough, epistaxis

Confirmed case:-A suspected case with demonstration of *Borrelia recurrentus* in peripheral blood film

Epidemiologically linked case:-Is a suspected case, which has contacts (possibly got *B.recurrentus*) with laboratory confirmed case or another epidemiologically confirmed case

Index case:-Suspected or confirmed louse born relapsing fever case (case that met the criteria for standard louse born relapsing fever case definition) that initiates the public health attention (may or may not visit health facility) and of course, the first case who possibly the source of infection for the other cases emerging.

Inclusion criteria

Cases:- Any resident of Mekele who tested positive for *B.recurrentus*and/or epidemiologically linked to laboratory confirmed cases and had symptoms of louse born relapsing fever within study period and who agreed to participate in the study was included.

Control:- A control was any resident of residents during the study period who was a neighbor to a case and who did not develop signs and symptoms of LBRF and agreed to participate was included.

Exclusion criteria

Cases:- Those cases that refused to participate or were not conscious and family members in the same household were excluded.

Controls: Those who refused to participate were excluded as well as family members from same household.

Ethical issues

A support letter was obtained from Tigray Regional Health Bureau and as this was an emergency epidemic investigation conducted as part of public health intervention, no ethical approval was

obtained. Oral informed consent was obtained from participants or from their parents to participate in the study. Confidentiality was assured and no personal details were recorded or produced in this documentation.

Results

Laboratory result

Eight case blood samples were tested and positive for louse born relapsing fever *B. recurrentis*. Hence, based on previous zero report of LBRF and the laboratory result typical louse born relapsing fever clinical manifestation and epidemiologically linked with laboratory confirmed cases, and the outbreak was confirmed and cases were treated as LBRF.

Descriptive Epidemiology

We identified a total of 21 LBRF cases and no deaths (CFR=0.0%) from 10th -25 February-2016. Mean age of 16.9- year and median 17-year [ranging: 15 - 20-year]. All total cases 21(100%) were males. All cases 21(100%) were age 15-20 year and were reported from 09 Kebele with an Attack Rate of 8 cases per 100,000 population. An overall AR=8/100,000 Population.

Descriptions of measles cases by time

Index case:

The index case was seen in Kedamy-weyane on 08-Feb- 2016. The case was a 16-old male (who's 7 other members of his friends got sick at different time and 7 of confirmed cases were in this group) who have no a travel history out of his village. He later came to Mekele health center, treated with porous antibiotics and cured.

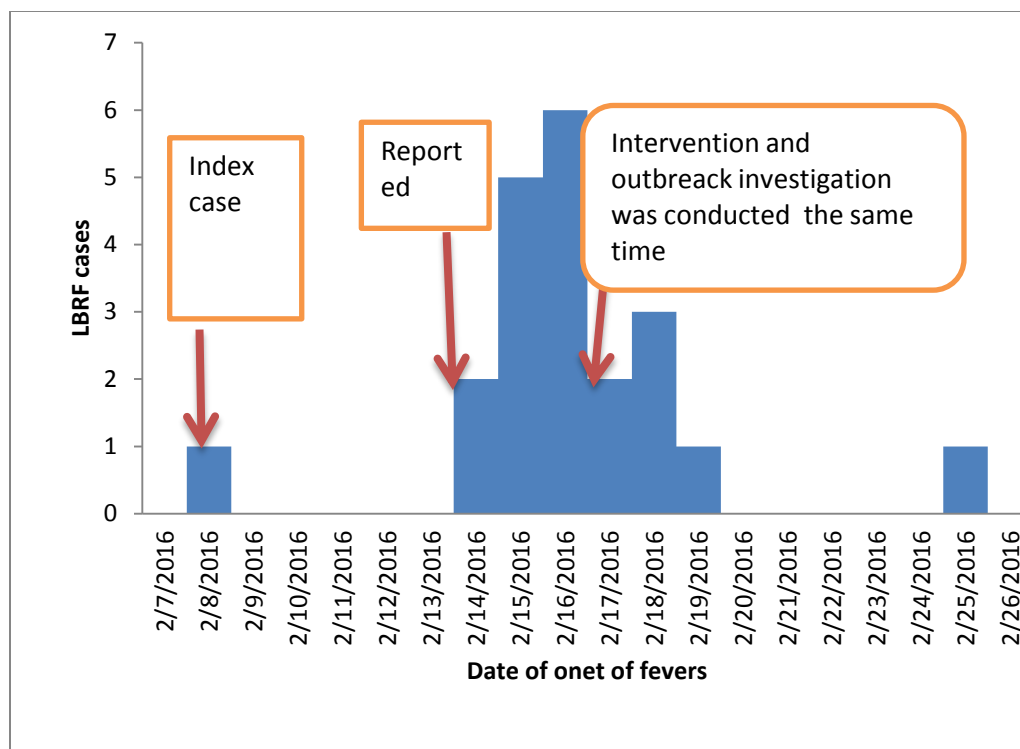


Figure 3.17 Epi-curve based on date of onset of fever Mekele-city, Tigray February 2016

Analytic Epidemiology

A total of 21 LBRF cases and 42 apparently healthy controls were included into this study. Participants were matched by; age and sex. All of 21(100%) cases and 42(100%) controls were male with the minimum age 15 and maximum 20 years old and mean age of respondents was 16.9 years and their median age was 17 years (SD 1.46); orthodox and Tigray in ethnic; 52.38% (11) cases and 14.29 % (6) controls were illiterate, 38.1% (8) cases and 30.95 % (13) controls were primary , 9.52% (2) cases and 54.76 % (8) controls were secondary and above in education status. From total confirmed cases 100% (21), 80.95 % (17), 71.43% (15) and 19.05% (4) presented with fever, head ache, chills and vomiting respectively.

Univariate logistic regression analysis of respondents of the study 66.7% (14) patients and 11.9% (5) controls were more than six people sleeping together, not taking bath at least weekly, Contact with LBRF ill person, did not wash their clothes at least weekly, Not changing cloths at night were statistically significant. The likelihood of acquiring relapsing fever for those slept more than six were fourteen times, not taking body bath at least weekly was about thirteen times, not washing clothes at least weekly was about eight times and that of not changing cloths at night

was six times higher compared to those slept less than six, taking bath, washing clothes at least weekly and changing cloths at night.

Table 2. 12 Factors associated with LBRF cases identified by univariate analysis, Mekele-city, February 2016

Risk factor	Cases				Control				OR	95%CI
	Yes	%	No	%	Yes	%	No	%		
More than 6 people or mass sleeping together	14	66.7	7	33.3	5	11.9	37	88.1	14*	4.025_54.416
Not taking bath at least weekly	37	76.2	5	23.8	8	19	34	81	13*	3.836_48.211
Contact with LBRF ill person	36	71.4	6	28.6	8	19	34	81	10*	3.135_36.005
Not washing clothes at least weekly	35	66.7	7	33.30	8	19	34	81	8.*	2.586_27.947
Not changing cloths at night	36	71.4	6	28.6	12	28.6	30	71.4	6.*	1.960_19.928

* Significant

Multivariate analysis of mass sleeping (AOR = 12.96, 95% CI [2.793-60.155]) showed a statistically significant association. The likelihood of acquiring relapsing fever for those who were sleeping more than six was about twelve times and that of not taking body bath at least weekly was one times higher compared to washing cloths and taking bath at least weekly.

Table 2. 13. Factors significantly associated with LBRF identified by multivariate analysis
Mekele-city, February 2016

Independent risk factor	P_Value or Sig.	Exp(B)	95% C.I. for EXP(B)	
			Lower	Upper
More than 6 people sleeping together	.001	15.962	4.793	60.155

No statistical difference was found on age, sex, ethnicity and educational status compared both cases and control. There was shortage of water for personal hygiene for cases but not controls. All patients were treated with antibiotic. The whole patients were completely recovered from their illness.

Public health Intervention undertaken to contain the outbreak

Observation of the situation of street people

- Around the bus station there was 20 mass sleeping houses or more than six people sleeping together
- The minimum number of street who slept in a small room was ten and the maximum was twenty
- Almost all street had no alternative cloth for day and night

• ***Actions Taken***

Discussion was made with Tigray regional health bureau PHEM and city health department public health emergency officer, sub city health officer and the team engaged in activating epidemic response task force to participate in active case detection & educating at gatherings to prevent and control the outbreak.

- The team engaged mass screening and conducted daily reporting cases to next level
- Supportive supervision in the case management & epidemiological linkage

- Health education for all street and delousing was done
- Mass sleeping houses of (20) were clothed sprayed with Malathion within three days

Discussion

Our investigation revealed LBRF outbreak in Mekele, Tigray Regional State. The index case was on 8th of February 2016 in Mekele reported by the city administration health office and the study was conducted from 15th -25th February, 2016(figure1). All cases 100% [8, 10] were male streets within age range of 15 -20 years. The reason for rise up and rapid spread of outbreak might be due to street, or low socio economic, poor personal hygiene, overcrowding and lack of alternative clothes. The number of cases was twenty one times more than the previous year (2015) cases (zero cases) reported to the regional health bureau in the same period. The evidence showed that all daily streets that live in poor personal hygiene and overcrowding condition were at risk of the outbreak. The overall attack rate (AR) was 80 per 100,000 populations and there was no death during the outbreak as compared with outbreaks occurred in other parts of Ethiopia. This could be due to small number of cases, early detection, treatment and good case management in the treatment sites; (1.9% in Asella hospital, 3.6% in Hosanna hospital and 4.6% Gondar, Ethiopia)[9].& baher-der[10]. Highest number of cases arose from kedamy-weyane 30.9 % (19), and %(2) from kebele may be due to the presence of bus station, forty eight mass sleeping houses for renting with low cost (75 birr per/month) in these kebele bus station was found and were centers of streets. After discussion, action plan was designed with regional, City administration and health facility authorities on prevention and control activities

Limitations: *small number of sample size, specific age group, sex and occupation were not representative of the whole Mekele population*

Conclusions

The attack rate (AR) was 8 per 100,000 populations and there was no death. The whole cases 100% (21) were male streets within age range of 15 -20 years. Poor personal hygiene among street, overcrowding (close contact) and lack of alternative clothes might contribute to increase the magnitude of the outbreak. Exchanging information between different levels and providing prompt response in reducing undesirable disease outcomes, increasing street's awareness, capacity building to health personnel, permanent solution to interrupt the occurrence and

distribution of the relapsing fever out-break requires more effort from all government and stakeholders.

Recommendations

This finding suggests that relapsing fever was a threat to street.

1. Organize zonal meeting session with representative from all sectors including the zonal administrators to discuss the way how to minimize mass sleeping houses and solutions for street
2. Increase Street's awareness through continuous health information
3. Streets must wash cloths and take bath at least weekly
4. Close supportive supervision by city health department

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Chapter VI – Abstracts for Scientific Presentation

6.1 Louse Borne Relapsing Fever Outbreak Investigation in Mekele-city, Tigray Ethiopia

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Abstract

Background: Louse-borne relapsing fever is an acute febrile illness caused by *Borrelia recurrentis* and is transmitted by body lice, *Pediculus humanus corporis*. In February, 2016 a LBRF outbreak was reported from Mekele and we investigated the outbreak to characterize it, identify risk factors, and implement public health control measures.

Methods: matched case-control; cross-sectional investigation was conducted from 8th -25 February, 2016. All cases 21(100%) were reported from Mekele and a predesigned questionnaire was used for data collection. Data was checked for completeness, coded and analyzed using SPSS version 21. $P < 0.05$ was considered significant for comparison.

Results: We identified a total of 21 LBRF cases and no deaths (CFR=0.0%). Mean age of 16.9-year [ranging: 15 - 20-year]. All cases 21(100%) were males street with overall AR=8/100,000 Population. Multivariate analysis showed that mass sleeping [Adjusted Odds Ratio [(AOR) =15.96, 95% CI (4.793_60.155)] with P-value 0.002 were independent risk factors for LBRF among homeless males in Mekele-city.

Conclusions: In Mekele, LBRF is still an important health problem. Poor personal hygiene among street, overcrowding (close contact), not taking bath and lack of alternative clothes might contribute to increase the magnitude of the outbreak. Therefore, health education should be delivered towards LBRF prevention in the city.

Key words: Louse-borne relapsing fever, Mekele-city, Ethiopia.

6.2 Scabies Outbreak Investigation in Doga-temben District, South East Zone, Tigray Region, Ethiopia-March, 2016

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Abstract

Background Scabies is a neglected parasitic disease that is a major public health problem worldwide, and particularly in resource-poor regions. It affects about 300 million people worldwide yearly. The aim of investigation was to investigate the occurrence of scabies, identify the risk factors and suggest practical control measures to alleviate the disease burden of the community in Doga-temben, Tigray.

Methods Unmatched community based case- control (1:2), non probability purposive sampling investigation was conducted and a predesigned questionnaire was used for data collection.

Results: A total of 40 scabies cases were identified from three Kebeles. There were no deaths reported. The median age was 23.00-years [SD 12.16]. Of total cases 25(65.5%) female and 15 (35.5%) were male. The overall attack rate (AR %) was 0.069%. Multivariate analysis showed that itching in the family [Adjusted Odds Ratio [(AOR) =98.78, 95% CI (12.408_786.245)] infrequent use of soap [(AOR) =19.75, 95% CI (2.702_144.374)], infrequent changing of cloths [(AOR) =17.71, 95% CI (2.815_111.505)], dealing with animal outside house [(AOR) =5.33, 95% CI (2.924_30.828)], and Skin contact with scabies case of last two month [(AOR) =5.16, 95% CI (2.939_28.347)] were independent risk factors for contracting scabies among doga-temben community.

Conclusions: Scabies outbreak occurred in Doga-temben District, Tigray. It primarily affected under 5 years. Itching in family/collogues, incorrect hygienic practices, and Poor living conditions are important risk factors for transmission of scabies. We recommend enhancing,

strong ongoing active case surveillance of scabies; health education on treatment and prevention of scabies to be enhanced and continued in the community by health workers to provide treatment and health education would be very beneficial.

Key words: Outbreak, risk factors, scabies, Doga-temben

Chapter VII – Narrative Summery of Disaster Situation Visited

7.1 Health Bulge Report of Selected Eight districts of Afar, Ethiopia, 2015

INTRODUCTION

EXECUTIVE SUMMARY

Introduction: Humanitarian need assessment is a bi-annual exercise done across the nation following the two main rainy seasons, i.e. Meher and Belg. The assessment is lead by Federal Disaster Risk Management and Food Security Sector (DRMFSS) and respective Regional Government Disaster Prevention and Food Security Coordination Offices in collaboration with UN agencies. Government sectors from federal and regional bureaus, international and local NGOS also take part in the assessment. The assessment is based on the livelihood zonal classification. In Afar National Regional State 8 wereda were selected for the assessment out of which 75 are priority I hot spot and the rest 3 are priority II hot spot wereda. This document holds the non-food assessment report which includes health, nutrition, water, sanitation, and hygiene.

Methods: The assessment was conducted using a nationally standardized health and nutrition Belge rapid emergency needs assessment checklist. Information was collected using the checklists, and observations and discussions with PHEM officers and District Administrators and Sector Offices officials and concerned experts. Information was collected on existing and or potential emergencies on health, nutrition. Experts from Ethiopian Health and Nutrition Institute (EHNRI),Tigray regional health bureau (TRHB), Field Epidemiology Training Program(FETP) students, Ministry of Water and Energy (MWE), Afar Bureau of Water and Natural Resources (BOWR) and UNICEF. Two teams were assigned and our team was assigned to the zones One, Three and Five consists of eight districts of Afar Region.

Result: A total of eight Wereda were assessed based on the livelihood zone classification of the region. Five of the wereda are priority I hot spot and the rest 3 are priority II hotspot wereda. A total of 521222 people live in this wereda. The under-five population is 61264. In the assessed wereda there are a total of 111 health institutions (2 Hospitals, 19 Health centers and 90 Health posts). During this assessment Awash fantale, Gawane and Dalefage Woreda was sent each five sample of measles cases to Ethiopian Public Health Institute. The main causes of morbidity

registered in all the woredas in the past five months were Malaria and Pneumonia for less than five children and above five year ages respectively. Moderate malnutrition was mentioned as first cause of morbidity in two woredas (Amibra and Elidar) for under five children. The trend of malnutrition of less than five year for the last 5 months showed some decline in April, but heads down after April. The overall malnutrition situation in the assessed woredas is poor. The regional proxy SAM rate is 4.1% which falls under normal, but needs special attention as there are aggravating factors. No shortage of nutrition supplies were reported in all the woredas. In all Woredas the availability of emergency drugs and supplies were assessed. Based on the findings almost all woredas have emergency drugs and supplies, but not in enough amount. Coartem, Amoxicillin suspension and Vit A were mentioned by most woredas as shortages. ORS were the supply excessively available in all the woredas. RDT and LP set for meningitis, and CTC kit for AWD were not available in all the assessed woredas. Based on this assessment only 4 woredas have functional PHEM and 4 has preparedness plan out of this. Only two woredas (Elidar and Chifra) have planned accessible emergency fund even though the amount is very minimal.

Conclusion: - The overall health and nutrition condition in the assessed woredas is at high risk of increased malnutrition rate and epidemic. Especially the occurrence of measles cases in some of the woredas should be taken with special attention as this might lead to region wide epidemic.

- Improved HMIS
- Possible outbreak of Measles
- Poor follow up reported case results (Measles)
- No budget allocated for coordination and emergency preparedness
- Possibility of increased under nutrition cases due to chronic food insecurity, lack of milk, high market price, shortage of nutritious food to children.

Introduction

Humanitarian need assessment is a bi-annual exercise done across the nation following the two main rainy seasons, i.e. Meher and Belg. The assessment is led by Federal DRMFSS and respective Regional Government Disaster Prevention and Food Security Coordination Offices in collaboration with UN agencies. Government sectors from federal and regional bureaus, international and local NGOS also take part in the assessment. The assessment is based on the livelihood zonal classification. In Afar National Regional State 8 wereda were selected for the assessment out of which 75 are priority I hot spot and the rest 3 are priority II hot spot wereda. The assessment was done for food and non food part. This document holds the non-food assessment report which includes.

- Health and Nutrition
- Water, sanitation and Hygiene and
- Education.

Each section report is put in section with detail findings and respective sector preparedness plan.

The team composition in non -food sub team composes a staff from;

- ▶ Ministry of Water and Energy
- ▶ Ethiopian Public Health Institute
- ▶ Afar National Regional State Bureau of Health
- ▶ Afar National Regional State Bureau of Education
- ▶ Afar National Regional State Bureau of water resources and Energy
- ▶ Kelem Education and Training Organization
- ▶ UNICEF

Background

In this case, Belg (Sugum in Afar context) assessment was done from June 22, 2015 through July 8, 2015. The team composition who takes part in the health and nutrition were 4 members (1 from RHB and the other 3 from UNICEF). All the wereda assessed are hot spot wereda out of which 5 are priority I and the other 3 are priority II wereda.

Table 2. 14 List of assessed wereda and their Emergency FSN level, Afar, May 2015

SN	Zone	Wereda	Priority
1	Zone 1	Eliddar	1
2	Zone 3	Awash Fentale	1
3	Zone 3	Amibara	1
4	Zone 1	Korri	1
5	Zone 5	Dalifage	1
6	Zone 1	Chifra	2
7	Zone 3	Gewane	2
8	Zone 5	Hadelela	2

Objective of Health and Nutrition Assessment

General objective

To assess the impact of the bulgi/sugum season on the community's health and nutrition status
Afar, May, 2015

Specific Objectives

- To assess the type, degree and effects of any epidemics occurred in Afar National Regional State since the 2015 sugum season and/or anticipated epidemics in the coming six months;
- To identify top-five causes of morbidity in both < 5 children and adults in /2015 (2007 EFY)
- To assess the Zone's practice in public health emergency management (PHEM) and coordination of multi-sector PHEM forums; check whether multi-sectoral public health emergency management (PHEM) forums are functional, public health emergency (PHE) preparedness plan is in place, emergency drugs and supplies are available, and emergency response funds are allocated;
- To see the trend of malnutrition in the Zone;
- To suggest the development of necessary emergency health and nutrition preparedness and response plans based on the findings of the assessment.

METHODOLOGY

The 2015 multi-agency Belg/Sugum emergency needs assessment commenced on June 20, 2015 with briefing by staffs from federal DRMFSS followed by regional DPFSPCO briefing. Wereda level briefings involved higher officials, heads and experts of line offices including Administration, Health, Pastoral and Rural Development, Water Resources Development, Women and Children offices.

For the health part, targeted data sources were Wereda Health Offices records, Wereda officials, experts, community members and NGOs implementing in the areas. Data collection was made using structured formats and checklists while multi-sector discussion with Wereda government, document review, community interview and field observation were used for verification. Findings were analyzed using qualitative and quantitative analysis mechanisms mainly spreadsheets.

Data collected in regard to demography; multi-sector coordination, availability of emergency preparedness plan and accessibility of emergency response fund; trends of epidemic prone diseases; coverage of Latrine, safe water, ITN and IRS in 2005; availability of emergency drugs and medical supplies, major causes of morbidity, previous records of disease outbreaks, and malnutrition.

FINDINGS

GENERAL HEALTH PROFILE

A total of 8 Wereda were assessed based on the livelihood zone classification of the region. Five of the wereda are priority I hot spot and the rest 3 are priority II hotspot wereda. A total of 521222 people live in this wereda. The under-five population is 61264. In the assessed wereda there are a total of 111 health institutions (2 Hospitals, 19 Health centers and 90 Health posts).

Table 2.15 General Health facility and population profile of assessed woredas Afar, may 2015

Table 1: Wereda Profile							
Wereda	Population				Health facilities		
	Total	M	F	U5	Hospital	HC	HP
Elidaar	94,490	48,191	46,300	12850	0	3	12
Kori	58,611	30,478	28,133	6213	0	2	3
Chifra	109,998	61,599	48,399	11066	0	3	19
Gewane	38,651	21,365	16,786	3838	0	2	12
Amibara	87,284	48879	38405	11871	1	4	20
Awash F	17,675	9898	7777	2404	0	1	6
Hadelela	42,666	22187	20054	5,794	0	2	9
Dalifage	71,847	39840	32007	7,228	1	2	9
Total	521222	282437	237861	61264	2	19	90

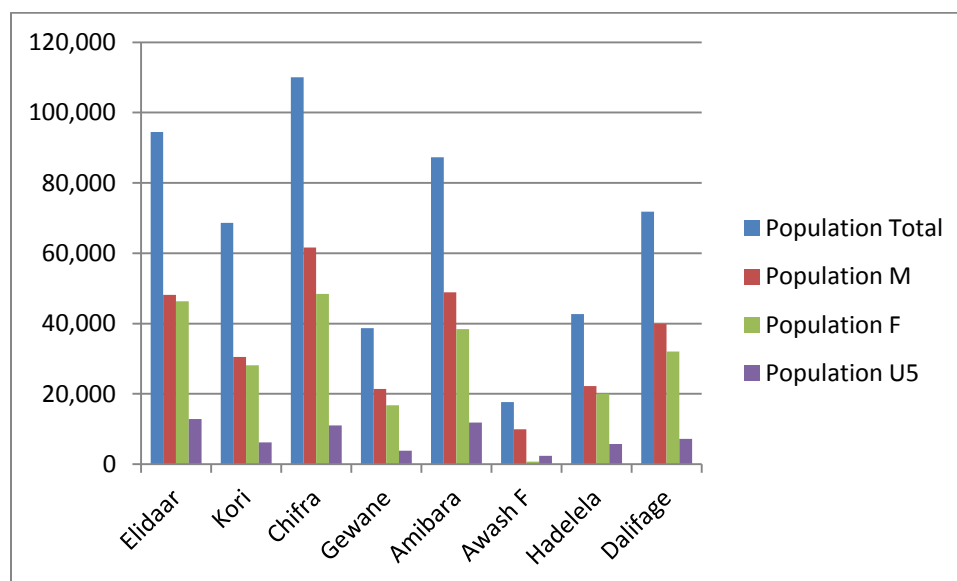


Figure 3.18 Population profile of selected district during bulge assessment Afar may, 2015

COORDINATION PUBLIC EMERGENCY RESPONSE PREPAREDNESS

To manage emergencies accordingly the preparedness of the Woredas and the presence of functional emergency coordination and forum are very important. Based on this assessment only 4 woredas have functional PHEM and 4 has preparedness plan out of this. Only two woredas (Elidar and Chifra) have planned accessible emergency fund even though the amount is very minimal.

Table 2. 16 Coordination and Emergency preparedness of assessed wereda Afar may 2016

Woredas	PHEM	Plan	Accessible fund	Amount of fund
Elidear	1	1	1	12,000
Kori	0	0	0	0
Chifra	1	1	1	40,000
Gewane	0	0	0	0
Amibara	1	1	0	0
Awash F	0	0	0	0
Hadelela	0	0	0	0
Dalifage	1	1	0	0
Total	6	5	2	52000

MORBIDITY

The main causes of morbidity registered in all the woredas in the past five months were Malaria and Pneumonia for less than five children and above five year ages respectively. Moderate malnutrition was mentioned as first cause of morbidity in two woredas (Amibra and Elidar) for under five children.

OUTBREAK SITUATION

The main diseases in focus were all the 20 diseases under surveillance with special attention to Malaria, AWD, Meningitis and Measles. Cases of measles were detected in three wereda which would be defined as epidemic if the case is confirmed.

Acute Watery Diarrhea:

Within the past three years no AWD was registered with in the health institutions of assessed wereda. The latrine coverage of assessed wereda the maximum coverage in Kori wereda with utilization rate of 60% the maximum safe water coverage is 70% registered in Amibara. The average latrine coverage in all 8 assessed wereda is 31% with utilization coverage of 25%. The average safe water coverage for the assessed wereda is 42%.

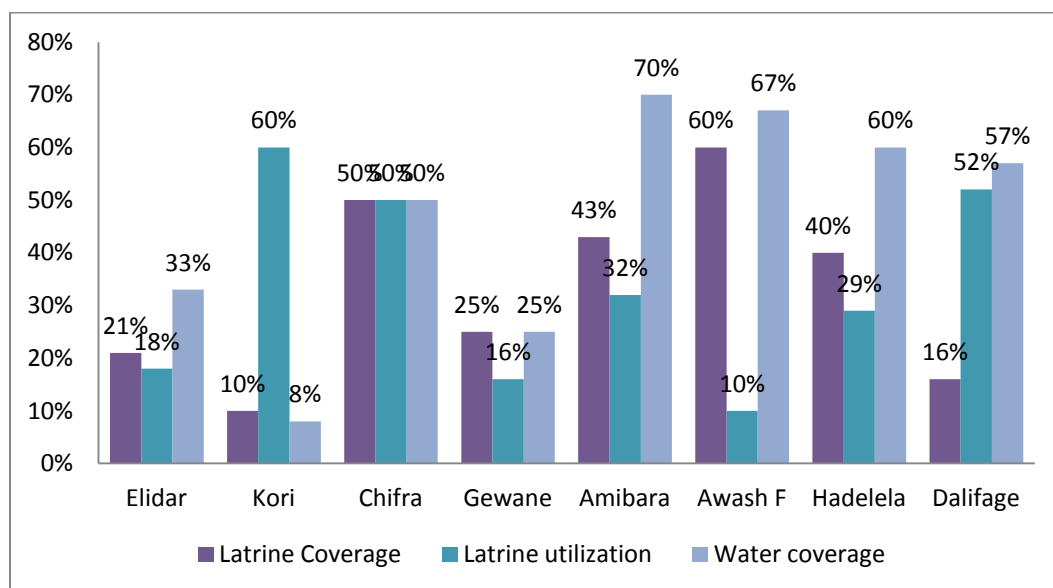


Figure 3.19 Latrine coverage, utilization, and safe water coverage of assessed wereda Afar may, 2016

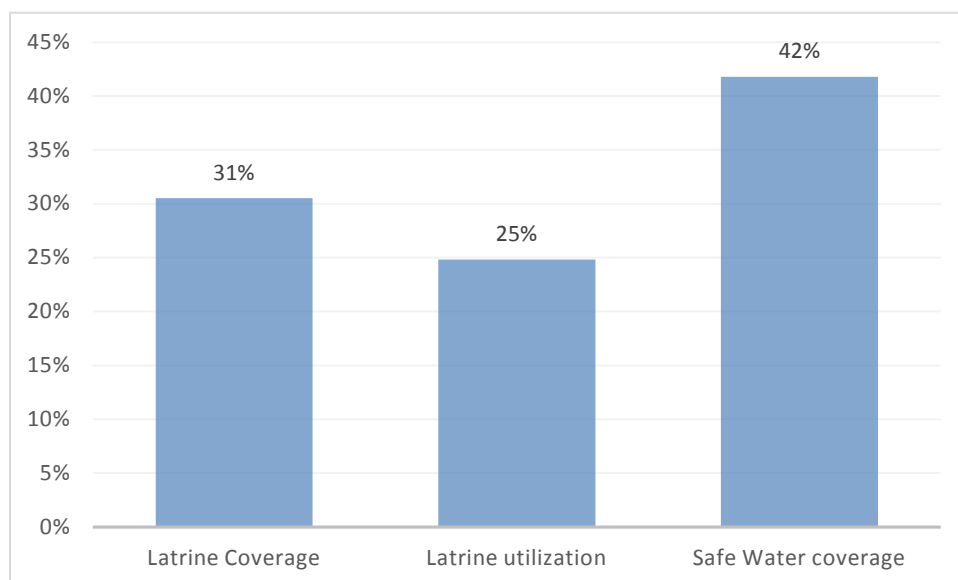


Figure 3. 20 Regional latrine coverage, utilization and safe water during bulge assesment may 2016

Malaria:-Malaria is the top cause of morbidity for both under-fives and above five years ages. Highest number was registered in Zone 1 and zone 3. Within the past five months a total of 21769 cases were treated for confirmed malaria diagnosis. The maximum cases in Amibara where 4464 treated for confirmed malaria. No death was registered in all the woredas due to malaria.

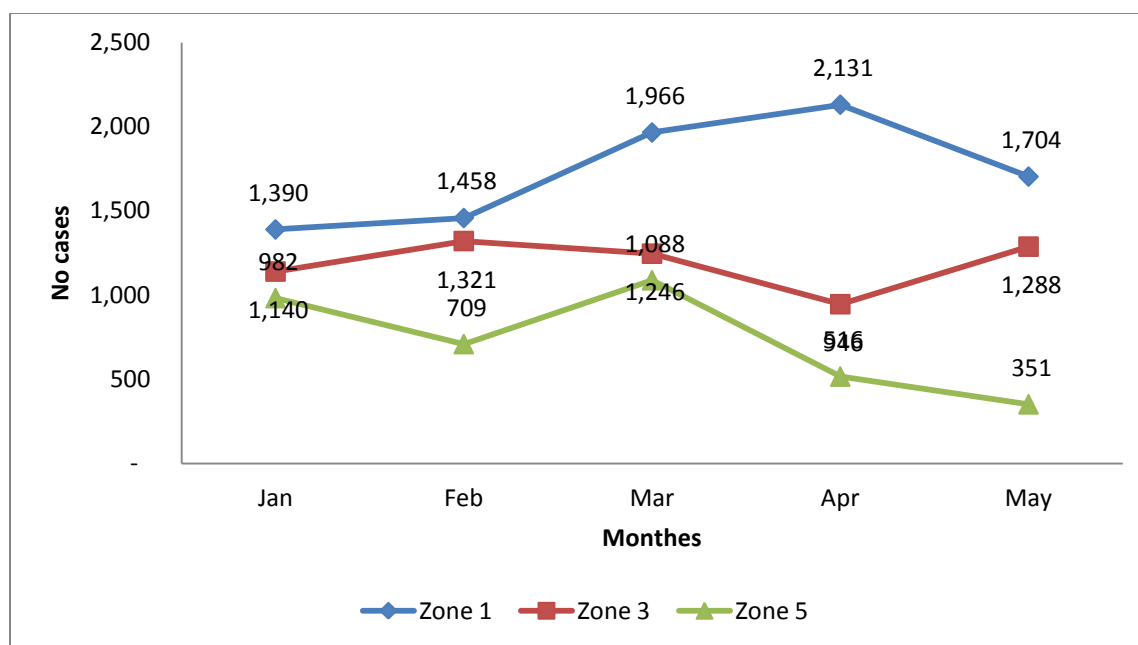


Figure4.21 Cases of malaria treated in assessed zones of Afar from January to May, 2015

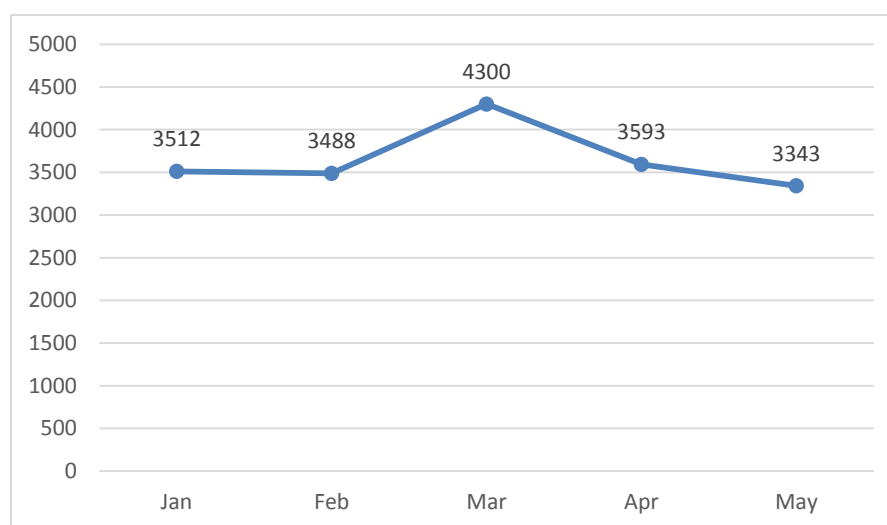


Figure4.22 Summary of Malaria trends in month of assessed districts; Afar, 2015

All the assessed wereda are entirely malaria endemic woredas. Different prevention intervention were implemented in the woredas mainly IRS, distribution of LLIN and drainage of swampy areas. The LLINS coverage is 100% in 6 woredas, and the minimum is 90% in awash fentiale.

IRS is conducted in only 4 woredas. The maximum IRS coverage is in Hade Lela (84%) and the minimum is in Gewane and Amibara (32%).

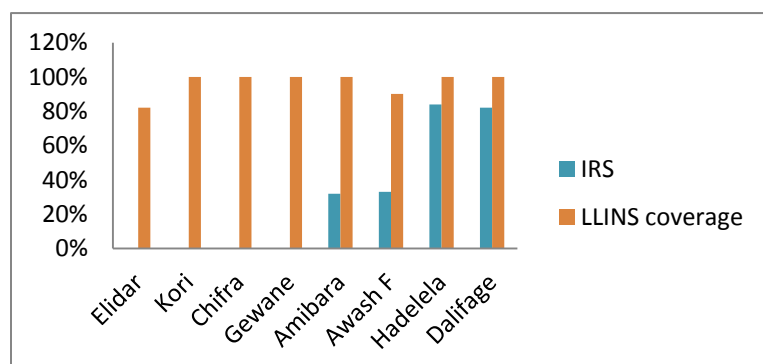


Figure4.23 LLINT and IRS coverage of assessed woredas, May 2015

Measles:

Out 8 Woredas visited woredas 36measles cases were detected in 3 woredas (Gewane, Awash Fentale and Dalifage) from January-June 2015. There were 40 community reported case in Gewane as per the information from woreda cabinet members. But according to Regional WHO coordination Office only 5 death cases were attributed to death due to measles after the cases were retrospectively studied.

The coverage of measles vaccination in the selected woredas ranges from 24% (Chifra) and 87 % (Hadelela). There are only three woredas which undergone supplementary immunization activities (SIA) in assessed woredas. The average routine EPI measles coverage is 69%.

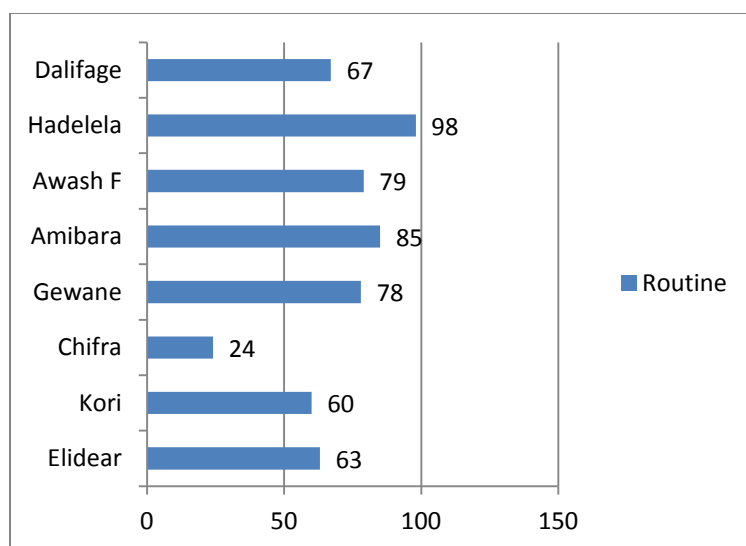


Figure 4.24 Routine Measles EPI coverage of assessed district, May 2015

In conclusion, the detection of measles cases in some of the woredas signals that the condition can be exacerbated which needs further attention from RHB and all the concerned stakeholders.

Table 2. 17 Number of measles cases registered during bulge assessment in eight selected wereds and months, 2015

Woredas	Months						Total
	Jan	Feb	Mar	Apr	April	June	
Gewane	0	10	0	3	4	0	17
Awash F	0	2	0	0	5	0	7
Dalifage	0	0	0	3	5	4	12
Total	0	12	0	6	14	4	36

Meningitis:

There were no confirmed cases of meningitis reported in the past 5 months and also no history in the last 3 years in these woredas.

AVAILABILITY OF EMERGENCY DRUGS

In all Woredas the availability of emergency drugs and supplies were assessed. Based on the findings almost all woredas have emergency drugs and supplies, but not in enough amount. Coartum, Amoxicillin suspension and Vit A were mentioned by most woredas as shortages. ORS were the supply excessively available in all the woredas. RDT and LP set for meningitis, and CTC kit for AWD were not available in all the assessed woredas.

Figure 2. 25 Availability of emergency Drugs and supplies in eight wereda during bulge assessment, may, 2015

Drugs/Supplies	Elidar	Kori	Chifra	Gewane	Amibara	Awash F	Hadelela	Dalifage	Total
Ringer Lactate in bag	0	6	yes	96	0	36	Yes	20	158
ORS in sachets	0	1	yes	10000	20000	4500	Yes	30	34531
Doxycycline in capsules	10,000	40	yes	0	7000	10000	Yes	15	27055
Syringe with needle each	300	11	yes	Yes	2400	10000	Yes	20	12731
Gloves in pairs	2000	40	yes	Yes	2400	1000	Yes	30	5470
Amoxil Susp. In bottles	60	0	yes	70	50	100	Yes	15	295
Tetracycline Oint. In tubes	100	0	yes	18	50	0	Yes	30	198
Vitamin A in tin	2	16	yes	Yes	0	0	Yes	4	22
Coartem for Malaria in strips	2	1	yes	Yes	4000	40	Yes	4	4047
RDT for Malaria in test	2	0	yes	Yes	400	10	Yes	No	412
RDT for Meningitis	0	0	0	0	0	0	No	No	0
LP Set	0	0	0	0	0	0	No	No	0
CTC Kit	0	0	0	0	0	0	No	No	0
RUTF in ctn of 150 sachet	0	18	yes	55	17	5	30	5	130
F-100 in sachet	0	0	0	0	0	0	20	No	20
F-75 in sachet	0	0	0	0	0	0	10	No	10

NUTRITION SITUATION

The trend of malnutrition of less than 5 year for the last 5 months showed some decline in April, but heads down after April. The overall malnutrition situation in the assessed woredas is poor. The regional proxy SAM rate is 4.1% which falls under normal, but needs special attention as there are aggravating factors. No shortage of nutrition supplies were reported in all the woredas.

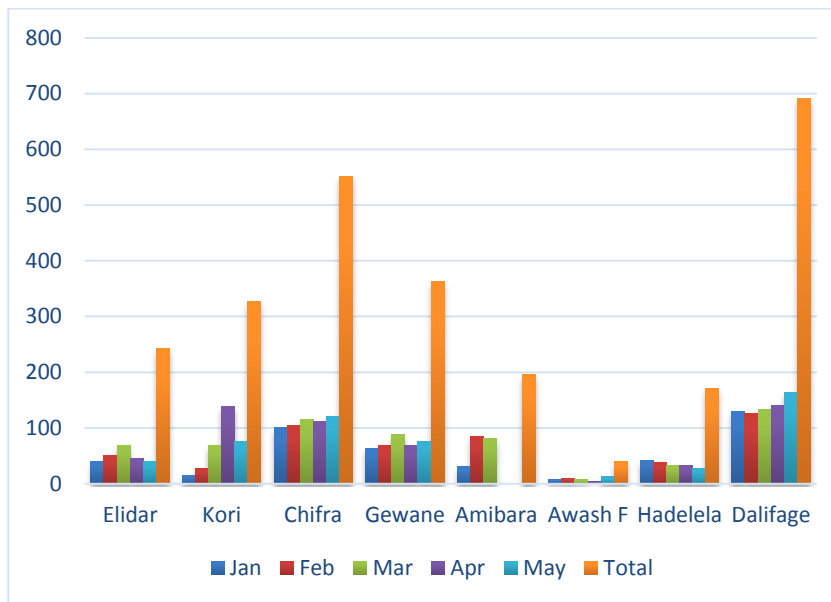


Figure 2.5, SAM trends of assessed werads of Afar from January to May, 2015

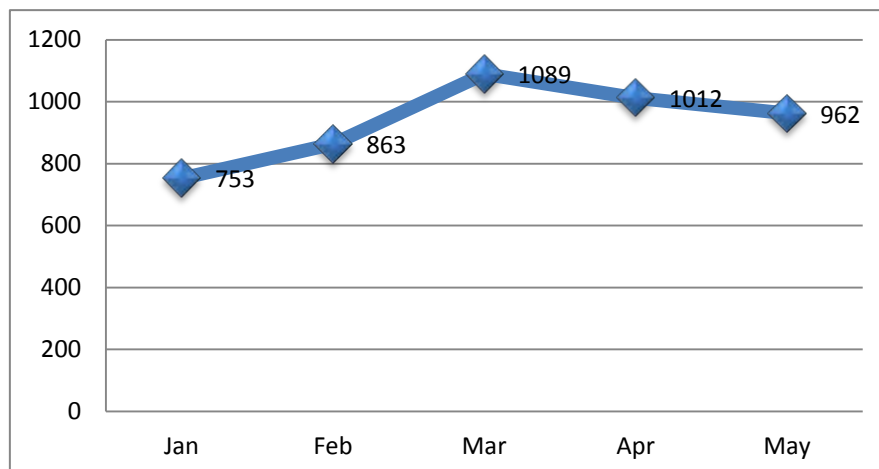


Figure 4.7 Regional (Afar) SAM trend from, JAN-May, 2015

CONCLUSION

The overall health and nutrition condition in the assessed woredas is at high risk of increased malnutrition rate and epidemic. Especially the occurrence of measles cases in some of the woredas should be taken with special attention as this might lead to region wide epidemic.

- ✓ Improved HMIS
- ✓ Possible outbreak of Measles
- ✓ Poor follow up reported case results (Measles)
- ✓ No budget allocated for coordination and emergency preparedness
- ✓ Possibility of increased under nutrition cases due to chronic food insecurity, lack of milk, high market price, shortage of nutritious food to children.

RECOMMENDATION

- Conduct measles SIA in woredas and neighboring woredas with suspected measles cases
- Close follow up of neighboring woredas where measles were detected
- Allocate budget for coordination and preparedness
- Avail emergency drugs and supplies in ample amount
- Strengthen Routine EPI
- Strengthen communication system/ use of all possible means
- Strengthen H&N activities

Annex V – Rapid Belg assessment- Health & Nutrition Sector: Woreda level Questionnaire 2015

Interviewer name _____				Institution: _____					
Interview Date: (dd) ____/(mm) ____/2015 ____				Region: _____ Zone: _____ Woreda _____					
Main contact at this location: Name: _____				Position: _____		Tel: _____			
SECTION I: SOCIO- DEMOGRAPHIC PROFILE									
1.1. Woreda total population:		M: _____ F: _____		Under 5 _____		Total: _____			
1.2. Special Population (<i>if any</i>):		Pastorals _____	Refugees _____	IDPs _____	Migrant Workers _____				
SECTION II: HEALTH PROFILE									
2.1. Coordination									
Is there a multi sartorial PHEM coordination forum?							Yes ☐ No ☐		
Is there a PHE preparedness and response plan?							Yes ☐ No ☐		
Is there accessible emergency response fund?							Yes ☐ No ☐		
2.2. Morbidity (List top 5 causes of Morbidity) in the year 2007 EC (Jan.- May 30, 2015)									
a. Morbidity below 5				b. Morbidity above 5					
1.				1.					
2.				2.					
3.				3.					
4.				4.					
5.				5.					
2.3. List number of cases/deaths from Tir 2007 to Ginbot20078 (January–May2015) for the last 5 months									
Month	AWD		Malaria		Measles		Meningitis		Other (specify)
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases	Deaths	
Jan. 2014									
Feb. 2014									
March 2014									
April 2014									
May 2014									

2.4. Outbreak?			
Was there any outbreak in the last 5 months? YES _____ NO _____			
If yes, specify the type of disease			
Type of outbreak _____ Number of cases _____ Deaths _____ (specify the time period) _____			
Is there any ongoing outbreak of any disease? YES _____ NO _____			
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) _____			
2.5. Preparedness: Is there emergency drugs and supplies enough for 1 month? Or easily accessible on need?		If yes, indicate the amount	
Ringer Lactate (to treat AWD cases)	Yes ☐ No ☐		
ORS (to treat AWD cases):	Yes ☐ No ☐		
Doxycycline (to treat AWD cases):	Yes ☐ No ☐		
Consumables : Syringes, Gloves (for AWD management):	Yes ☐ No ☐		
Amoxil susp (measles)	Yes ☐ No ☐		
Tetracycline ointment (measles)	Yes ☐ No ☐		
Vit A (measles)	Yes ☐ No ☐		
Coartem for Malaria	Yes ☐ No ☐		
Lab supply: RDT for Malaria	Yes ☐ No ☐		
Lab supply: RDT (pastorex) for Meningitis	Yes ☐ No ☐		
LP set	Yes ☐ No ☐		
Number of CTC kit available: (for AWD) _____			
Main shortage (if any): Specify _____			
Is budget allocated for emergency Rapid response by the woreda?		Yes ☐ No ☐	
SECTION III: RISK FACTORS			
Diseases	Risk factors for epidemics to occur	Yes	No
Malaria	Is it Malaria endemic area?		
	Is there presence of malaria breeding site?		
	Is there interrupted or potentially interrupting rivers?		

	Is there unprotected irrigation in the area?		
	Is LLINs coverage <80%?		
	Indicate the coverage of IRS 2005		
	Is there depleted prevention and control activities?		
	Number of malarious kebeles and total population in these Kebeles	Keb _____ pop _____	
Meningitis	Was there Meningitis epidemic in the last 3 years? (If yes specify date)_____		
	Has vaccination been conducted in the past 3 years?	Yes	No
	If yes: Indicate the date and number of people vaccinated?	Date _____	
AWD	Was there AWD epidemic in the last three years? (If yes specify date)_____	Yes	No
	Indicate Latrine coverage (%) _____		
	Latrine utilization (%) _____		
	Safe water coverage (%) _____		
Measles	Is there ongoing measles outbreak?		
	What is the measles vaccination coverage of 2007 for less than one year old children (Tir 2007- Ginbot 2007)? _____		
	Has SIA been conducted in 2007 EFY from Tir to Ginbot?	Yes	No
	If yes, Indicate the month and number of children vaccinated including the age group	Month _____	
		No. Vaccinated _____	
Age group _____			

Any other observations you made or any risks of epidemics?

What were the major challenges in your Epidemic response experience?

Section IV: Nutrition - TFP admissions at woreda level January to May 2015

Month	Total SAM Cases	Total Number of TFP (OTP/SC) in the woreda	Number of SC	Number of OTP.	Total Number of OTP/SC reported.	Therapeutic Supplies enough (for the next one month) Y/N			Children Discharged from TFP referred to SFP Y/N
						RUTF	F100	F75	
January									
February									
March									
April									
May									

Anycommen_____

Chapter VIII – Protocol/Proposal for Epidemiologic Research Project

8.1 Owner ship and Utilization of Insecticide-treated Nets (ITNs) for Malaria control in Dubti Afar National Regional State, Eastern Ethiopia

Executive summary

Background: Malaria remains one of the major public health concerns in Ethiopia. Insecticide-treated nets (ITNs) stood at center in the current efforts to prevent and control malaria at community and individual levels. Though ITNs are the most prominent measure for large-scale deployment in highly endemic areas their compliance in terms of ownership and usage needs attention.

Objective: The aim of this study will be to determine the ownership and utilization pattern of ITNs in Dubti Afar National Regional state, Ethiopia

Method: A community based cross-sectional study will be conducted in Dubti Afar Regional State from September 20 to December, 2016. A total of 1215 households will be included from malarious endemic areas. Data will be collect by using structured questionnaires and observational checklist.

Work plan: Data collection will be started on September 1, 2016 and ends on October 30, 2016. The study will be completed in December 2016.

Budget: the required cost for the study is estimated 101, 0 00 ETH birr

Introduction

Malaria is the most important parasitic and vector born disease caused by the four species (*Plasmodium vivax*, *Plasmodium falciparum*, *Plasmodium malaria*, *Plasmodium ovule*) in Africa, and another fifth species *P. Knowles* seems to be restricted to Southeast Asia [1], which is transmitted by infected *Anopheles* mosquitoes. It is one of the most important disease prioritize to eliminate by WHO [2]. Malaria still remains one of the most important parasitic diseases of the developing world although it is known to human kind since ancient times in different forms.. In 2015 alone, there were 214 million new cases of the disease and more than 400 000 malaria-related deaths. Millions of people around the world are still not accessing the health services they need to prevent and treat malaria. Global progress in malaria control masks disparities between and within countries. The African Region continues to shoulder the heaviest burden: in 2015, this one Region accounted for approximately nine in 10 malaria cases and deaths globally. Two countries, Nigeria and the Democratic Republic of the Congo, together account for more than 35% of global malaria deaths Malaria control is one of the highest priorities on the international health agenda as it contributes a lot in achievement of most MDG goals. Since 2000, malaria mortality rates have declined by 60% globally. Among children under 5 years of age, malaria death rates fell by 65%. In the WHO African Region, where the disease is heavily concentrated, malaria mortality rates fell by 66% among all age groups and by 71% among children under 5 years [3]. Ethiopia is among the few countries with unstable malaria transmission. Consequently, malaria epidemics are serious public health emergencies. In most situations, malaria epidemics develop over several weeks, allowing some lead-time to act proactively to avoid larger numbers of illnesses and to prevent transmission. About 75% of the country's land surface is malarious and about two-thirds of the population at risk of malaria infection. Approximately, 68% of the total population of over 58 million people million lives in areas at significant risk of malaria. Malaria is mainly seasonal in the highland fringe areas and of relatively longer transmission duration in lowland areas, river basins and valleys. Although historically there have been an estimated 10 million clinical malaria cases annually, cases have reduced since 2006. Malaria is a public Health priority problem and also has high Epidemic potential which causes high Outpatient morbidity which leads to high socio economic impacts in Ethiopia. [4; 5; 6] The WHO global malaria control and elimination strategy aims to achieve a 50% reduction in the malaria burden by 2010 compared to the levels in 2000 and at least a 75%

reduction in malaria incidence and near zero malaria-related preventable deaths by 2015. These goals are relevant for high-burden countries which implement malaria control programmes [7]. Malaria has been a major challenge to both public health and socio-economic development particularly in countries sub-Saharan African. Malaria is the leading cause of morbidity and mortality in Afar Region. Malaria transmission in the region is generally unstable, with perennial transmission in areas along the Awash River Valley where modern irrigation schemes such as Sabure, Amibara, Bure-Mudaytu, Gewane, Tendaho and Asayta extensively take place along the shores of Awash River. Consequently, the economic impact of malaria is far greater than for any other communicable disease. There were several instances of epidemics following flooding of Awash River; the worst incident was that of the 2000 that led to serious eruption of malaria and other water-borne disease epidemics [8].

Statement of the problem

Globally about 3.2 billion people – nearly half the world’s population – remain at risk of malaria. In 2015 alone, there were 214 million new cases of the disease and more than 400 000 malaria-related deaths. Millions of people around the world are still not accessing the health services they need to prevent and treat malaria. Global progress in malaria control masks disparities between and within countries. The African Region continues to shoulder the heaviest burden: in 2015, this one Region accounted for approximately nine in 10 malaria cases and deaths globally. Two countries, Nigeria and the Democratic Republic of the Congo, together account for more than 35% of global malaria deaths [3] Ethiopia is one among seven countries with high malaria transmission in East and Southern African region despite remarkable progress has been achieved in prevention and control of malaria is still the leading cause of outpatient visits and admissions. In 2011/2012 it accounted for 17% of the total outpatient visits and 8% of total admission. About 68% of the population in the country and 75% of the land mass is at risk of malaria. Areas with an altitude below 2000m above sea-level are significantly at risk of malaria. Currently, there has not been in any vaccine against malaria moreover the prevailing drug resistances become a critical issue among international community; in such circumstances vector control plays a prominent role. Insecticide Treated Nets (ITNs) for personal protection of vulnerable groups and community protection has been employed as main vector control tools in Ethiopia. Since 1997, ITNs were distributed to different parts of the country to control the transmission of malaria [9] According to the national malaria strategic plan (2014-2020); community empowerment and risk

of malaria uses LLINs. To roll back malaria the ministry of health set goals of the National social mobilization are given a high priority. ITNs specific objective of the strategic plan is 100% of households in malarious areas own one LLIN per sleeping space or At least 80% of people a Strategic Plan for Malaria Prevention, Control, and Elimination 2011–2015 which include By 2015, achieve malaria elimination within specific geographical areas with historically low malaria transmission and achieve near-zero malaria death in the remaining malaria-endemic areas of the country [10]. We had done district health profile April 2015, we found Dubti Wereda had annual malaria incidence rate in 2015 was 101/1000 population; it accounted for (44.2%) top one leading case of adult as well as under five OPD since 2012. In 2015 only 52% the ITN was distributed but the utilization was not assessed the kebel. In connection with these activities we thought, it is indispensable to investigate the owner ship, and actual levels of utilization ITNs use in the Wereda in order to meet the Millennium Development Goals (MDG's) and the Roll Back Malaria targets to take timely corrective actions.

Literature review

To ensure universal access, WHO recommends that one LLIN should be distributed for every two people at risk of malaria, and thus, improving access to LLINs should be the first priority [11]. Evidence has shown that there is a high correlation between access and use of LLINs. However, in areas where LLIN use is lower, WHO recommends the roll-out of well-designed behavior-change communication (BCC) interventions [12]. the national malaria control program has planned to scale up the coverage and distribution of long-lasting insecticidal nets (LLINs) to 100 % and increase ownership (at least two LLINs per household) in malaria endemic areas, and reach 86 % LLIN use among pregnant women and under five children by 2015 [9, 13]. Given that this plan is in due date, the government and key malaria partners have updated their strategic plan to attain the long-term goal of worldwide malaria elimination and eventual eradication by 2040–2050. For instance, the President's Malaria Initiative (PMI) Strategy (2015–2020) reaffirms continuing to sustain universal access and use of LLINs to assist PMI supported countries to progress towards elimination and eventual eradication [12].

A study conducted in Harare about 17.5% of the household respond as one of their family member had been infected with malaria during past one year 57.9% of household participants had at least one ITNs Most of the other households had responded as they had ITNs sometime in the past but they have lost it for unknown reason[14] A study conducted in Oromia region East Hararghe revealed that Of the total surveyed households, 65.5% (1879) had at least one LLIN, However only 33.5% (630) LLINs owned households had used at least one LLIN the night before the survey [15] Consistent use of ITNs can reduce malaria transmission by up to 90% and avert as much as 44% of all-cause mortality among children fewer than five years of age [16]. Use of ITNs among pregnant women is associated with lower prevalence of malaria infection, fewer premature births and significant reductions in all-cause maternal anemia. Study conducted in afar selected districts Household possession of at least one LLIN in the surveyed households was found in 648(86.1%) households. Ownership of at least two nets was found among 419(55.6%) surveyed households. The proportion of children under 5 years of age who slept under treated nets during the night preceding the survey was 728(82.0%) and 676 (76.1%) in the surveyed households for reported and observed respectively. Likewise, the proportion of pregnant women who slept under treated nets was 166 (79.1%) and 147(70.0%) for reported and observed respectively [8]. There is no published data on Dubti Afar National Regional State. Therefore, this study determined the ownership and utilization of ITNs in Dubti Afar National Regional State, Eastern Ethiopia.

Significance of the Study

Despite different interventions, malaria is continuing to be one of the major public health problems in the district. National strategies for malaria program have been designed to reach MDGs. Among the strategies ITNs utilization is internationally recognized standard to protect from malaria .However, Study conducted in Afar selected districts Household possession of at least one LLIN in the surveyed households was found in 648(86.1%) households. Ownership of at least two nets was found among 419(55.6%) surveyed households. The proportion of children under 5 years of age who slept under treated nets during the night preceding the survey was 728(82.0%) and 676 (76.1%) in the surveyed households for reported and observed respectively. Likewise, the proportion of pregnant women who slept under treated nets was 166 (79.1%) and 147(70.0%) for reported and observed respectively [8].

In addition there is low coverage (52%) ITNs and utilization of the district were not assessed. Health planners and Decision makers are willing to have evidence regarding up on this issue due to malaria endemicity increment throughout consecutive three years since 2012 in the Wereda despite the higher intervention of the cases. There is no published data on Dubti Afar National Regional State. Therefore, this study determined the ownership and utilization of ITNs in Dubti Afar National Regional State, Eastern Ethiopia.

Objective

General Objective: To determine the ownership and utilization of ITNs in Dubti Afar National Regional State, Eastern Ethiopia

Specific Objectives

To identify the proportion of households with Insecticide Treated Nets among householders in Dubti district

To calculate magnitude of recent ITNS Utilization among the households

To estimate the knowledge, belief and practice of the community towards vector control activities, ITNs

Methods

Study area

Dubti district is located in the eastern part of Ethiopia at the distance of 657 km from the capital City of Ethiopia Addis Ababa It is one of 8 Worde's of the awsa Zone with high Prevalence malaria where Malaria Epidemic is repeatedly occurred and many deaths were happened in the History of the malaria in this Wereda. This Wereda has a special mark for this deadly Disease. Dubti town is the administration town (Worde's capital city). It is bordered by Samara to the North, kori and Aysaita to the East, Mille to south and bounded by logia in the western part The climate varies from sami-aired months of rainfall, about two months, to dry seasons of, 10 months with an overall average minimum and maximum temperature of 42.2c and 24.7oc, respectively, and total average rainfall ranges 0-2.5 mm/month. The entire district accounts lowland. The total population of Dubti wereda is 78883 according to the 2007 Central Statistics Agency population census projection. All Population living in Dubti is in endemic malarias area the total number of households is estimated to be 13839 with the assumption of average household size of 5.7. Land is used by subsistent farmers for the cultivation of Maize's, Sugar

cane and different cash crops. Amazingly this district is bounded by Awash River. Awash River which was used as dome for the largest sugar irrigation in east Africa as well as other.

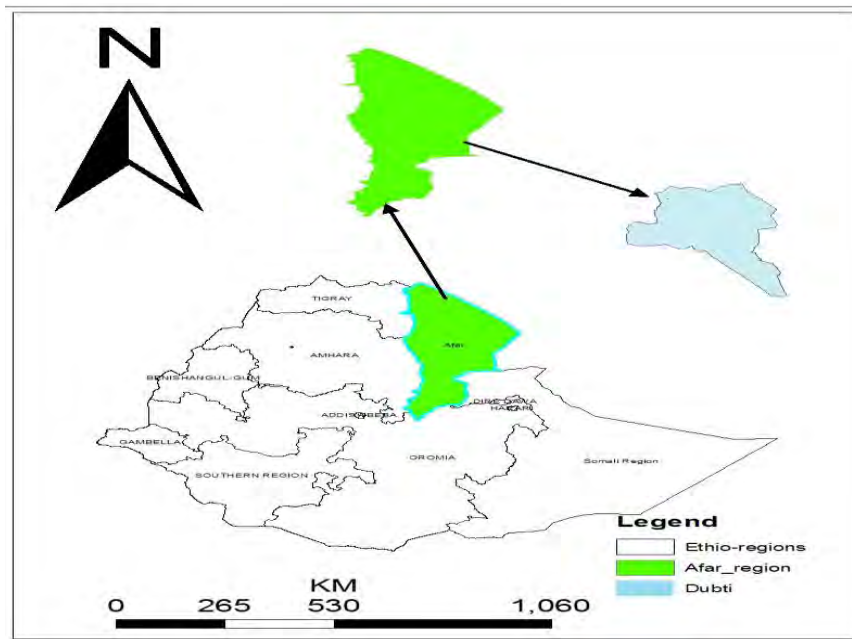


Figure 4. 26 Map of Dubti District Awsa Zone, Afar, 2016

Study design

Community based cross-sectional study design will be conducted in Dubti Woreda. Quantitative data will be collected from head of household members who had received LLITN in the past three years.

Sample size Determination

The sample size will be calculated using the standard formula for estimating a single proportion, Sample Size can be determined as;

$$\text{Sample Size (n)} = [z^2 \times p \times q] / d^2$$

Where: n = sample size

z = linked to 95% confidence interval (use 1.96)

p = expected prevalence (as fraction of 1)

q = 1- p (expected non-prevalence)

d = relative desired precision /tolerable error/ Maximum width (degree of accuracy)

$$\text{Non-response rate calculation} = \frac{\text{Number of Sample Calculated}}{1 - \text{Non Response Rate (NRR)}}$$

The assumptions taken are an expected proportion (ITN utilization) of 65% (from the Ethiopia Malaria Indicator Survey (MIS) 2011), 95% confidence level and a 5% tolerable error

$$\text{Sample size (n)} = (1.96)^2 \times 0.65 (1-0.65) / 0.05 \times 0.05$$

n = 546 Households

The study group will be multistage and the design effect was taken to be 2;

The total sample will be 2x 546 Households= **1093 Households**

10% Non- response rate will be considered,

Sample with non response calculation= **1093** this gives a total of 1215 Households.

Accordingly, the sample size required for this study is 1093 households. Adding 10% for nonresponsive, the grand total sample size required will be 1215 households. The sampling will be carried out in two stages. First 7 kebeles will be selected randomly using the lottery method from kebeles in which ITN's were distributed in the last three years and primarily, the malarious villages will be stratified as rural and suburban kebeles. Secondly, the existing households will be identified using registration list for LLITNS available at Wereda health office (used as sampling frame). The listing excluded institutional living arrangements and collective quarters (e.g., tendaho sugar factory, hospitals, police camps, and boarding schools). Sampling every sample at Kth households will selected from each kebeles by systematic random sampling techniques from random starting point until the allotted sample size fulfill. A representative sample of 1215 households will be selected. In the final stage using Systematic

Study period

Data collection will be started during higher malaria transmission starts from September 20, 2016 to December 20, 2016.

Source population:-The study subjects will be all Households who received ITNS within the last three years in Dubti district.

Inclusion Criteria:-Households who received ITNS from Afar region from year 2012- 2015 in the study population.

Exclusion Criteria:-The house hold heads or respondents those are unconscious or sick will excluded.

Sampling procedure:-Seven kebeles will be selected by lottery method from 15 malarious kebeles found in the Dubti:-Followed by systematic random sampling after the enumeration of the household members with LLITNs in respected seven kebeles.

Data quality assurance and collection

Data will be collected by trained three health profession with qualification of Bsc or diploma and final year EFETP resident of AAU by using structured questionnaires and observational checklist. The questionnaire will design to collect information on socio demographic characteristics, net ownership, family size, knowledge about mosquito nets, perception about the use of nets and others. It will adopt from the questionnaire used in another study in Ethiopia First, it will prepare in English and then translated to Afar languages. Pre-test will conduct outside the study area which use check the validity of our questionnaire, reaction of the respondents, language barriers, and time needed for administering the questionnaire and to make amendments if needed. House to house interviews will conduct with the participating household heads or another adult in the house (if the household head was absent or unable to respond for any reasons). Mosquito net tucking will assessed for those household who had ITNs.

Data analyses

Data will enter into Epiinfo Version 7.1.3 after checking their completeness by the research teams. Then, it will transport to SPSS 21.0 statistical package for windows for analysis. Descriptive statistics will use to examine the study variables. Univariate and bivariate analyses will perform to determine factors affecting ITN ownership and utilization by households as an outcome variable. Crude and adjusted odds ratio and their 95% confidence interval will use to examine the strength of association. A statistical test result will report as significant when its p value will less than 0.05.

Variables of the study

Dependant variables

- LLITNs utilization
- Owner ship

Independent variables:

- Age
- Sex
- Place of residence
- Occupation
- Marital status
- Religion
- Educational status
- Income
- Prior information on ITNs
- Source of information on ITNs
- Number of ITNs received
- Age of ITNs(less than three years, greater than Three years)

Operational definitions

Target group-groups which are nationally identified as high risk and given priority for ITN utilization, these include pregnant women and children less than 5 years of age, community affected by emergency and all others living in malarious area.

ITN utilization- The use of standardized properly hanged (mounted) over the bed or the Sleeping area and less than 5 years of age child and pregnant women sleeping under the Mosquito net during the early morning of observation day.

An insecticide-treated net is a mosquito net that repels disables and/or kills mosquitoes coming into contact with insecticide on the netting material. There are two categories of ITNs: conventionally treated nets and long-lasting insecticidal nets:

A long-lasting insecticidal net is a factory-treated mosquito net made with netting material that has insecticide incorporated within or bound around the fibers. The net must retain its effective biological activity without re-treatment for at least 20 WHO standard washes under laboratory conditions and three years of recommended use under field conditions.

Ethical consideration

Ethical clearance will be obtained from Addis Ababa University Colleges of Health and Medical Sciences Institutional Health Research and Ethical Review Committee. Prior to data collection regional health bureau, local officials and the community will be approached through formal letters written from the Addis Ababa University. All the participants will be explained about the purpose and their right to participate or not to participate in this study. Those who will give their written consent will participate in this study. Moreover, all personal information of the participants will be kept confidential.

Dissemination of findings:-Results (hard and soft copies) will be submitted to Addis Ababa University/School of Public Health Ethiopia Field Epidemiology Training Program, Afar Regional Health Bureau, finally to Awsa Health department and Dubti district Health office for the future LLITNs utilization improvement. One day conference will be arranged at district level to present the study results. In addition effort will be exerted to publish the paper and disseminate it via presentation on different national and international conferences.

Expected outcomes

The ownership and utilization of ITN's will be clearly identified

Work Plan

Phase	Activities	May 2016			September 2016				October 2016			November 2016				December 2016				
		Wk 2	Wk 3	Wk 4	Wk 1	Wk 2	Wk 3	Wk 4	Wk 1	Wk 2	Wk 3	Wk 4	Wk 1	Wk 2	Wk 3	Wk 4	Wk 1	Wk 2	Wk 3	Wk 4
Phase I	Proposal Writing																			
	Draft preparation and Revision																			
	Finalizing the Proposal																			
	Ethical Clearance																			
	Preparing Data Collection Instruments																			
	Supplies and assessment materials																			
	Data Collectors																			
	Recruiting Data collectors																			
	Training																			
	Pretesting data collectors tool																			
	Selecting enumerates																			
Phase II	Conduct field Assessment																			
Phase III	Data Analysis																			
Phase IV	Writing Report																			
	Preliminary report writing																			
	Submission of the preliminary report																			
	Writing the final report																			
	Present & disseminate																			

Budget Break Down

Item/Activity		Number/quantity	Rate /Day	Duration Work Day	Total	
					Birr	Cent
A. Personnel Cost						
1. Training						
Supervisors		1	400	1	400	
Data Collectors		5	300	1	1,500	
Breakfast/Tea/coffee		15	50	1	750	
Sub total					2,650	
2. Data Collectors						
Data Collectors		5	300	20	3,000	
Supervisors		1	400	20	8,000	
Principal Investigator		1	500	40	20,000	
Sub total					31,000	
B. Equipment and supplies						
Paper	Pack	10		10X200	2000	
Photo Copy	Page	200X1.50			300	
Printing the proposal page		20X2.5			50	
Printing the Draft	Page	60X2.5			150	
Printing the final	Page	120X2.5			300	
Pencil	Each	10X3			30	
Pen	Each	10X5			50	
Markers	Pack	2X50			100	
Clip Board	Each	1			500	
Chart Paper	Pad	4X500			2000	
Eraser	Each	10X2			20	
Sharpener	Each	10X5			50	
Note book	Each	10X20			200	
Mobile card	Each	100X20			2,000	
Soft Paper	Each	10X10			100	
Soaps	Each	10X10			100	
GPS	Each	2X500			1,000	
Cars	Each	1	2500	20	50,000	
Contingents	10%				8,000	
Tag, Badge for data collectors		7X71			400	
Sub Total					68,441	
Grand Total					101,000	

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15. Tesfaye Gobena¹, Yemane Berhane² and Alemayehu Worku³ Low long-lasting insecticide nets (LLINs) use among household members for protection against mosquito bite in kersa, Eastern Ethiopia

16. Ethiopian Malaria indicators survey by FMOH; 2011) In addition to this the status of LLITNS Utilization was not known in the Woreda and as well in the zone.

Annex VI – Owner Ship and Utilization of ITNs questionnaire for house hold Dubti Afar in Ethiopia, 2016

Hello, I am-----, I am working for -----

May I talk with you for a few minutes? I am here on be on behalf of the researcher conducting study on malaria vector control. We will ask you a few questions. Would you please participate?

The whole thing we discuss will be treated confidentially but you should feel free to remain silent if you hesitate to answer a particular question and feel free to ask me have any question /comment

1.characteristics of study participant households in Dubti afar National Regional	
Socio demographic characteristics	Code
Age	
Ethnicity	
Afar	1
Amara	2
Others	3
Sex	
Male	1
Female	2
Occupation	
Government employee	1
Merchant	2
Farmer	3
Student	4
Private employee	5
Daily laborer	6
Other	7
No job	
Educational status	
Cannot read and write	1
Read and write	2
Elementary school(1-8)	3
Secondary school 9-12	4
Tertiary (college/university)	5

2. Knowledge equations and perception of households about ITNs and malaria transmission	
Characteristics	Code
At least one family member infected with malaria in past one year	
Yes	1
No	2
Knowledge of respondent about use ITN	
Repeal mosquito (avoidance of biting of mosquitoes)	1
Kill mosquito	2
Prevent malaria	3
Kill fleas/bugs	4
Protect person from dust/dirt	5
I don't know	6
Other	7
Can someone get malaria while sleeping under ITNs	
Yes	1
No	2
Knowledge about malaria transmission by mosquito bite	
Yes	1
No	2

Who will get priority if there is only one ITNs to sleep under it?	
If you have only one ITNs who can get priority to sleep under it	Code
wife and child under 5, husband, wife and child under 5	1
husband and wife	2
younger children(b/n5-14)	3
Wife	4
youths(age>15)	5
Husband	6

Other	7
elderly/grand parents	8
pregnant women	9

3.ownership, utilization ,reasons for not using, demonstration of proper use of ITNs	
Characteristics	
Number of ITNs per household	
One	1
Two	2
three	3
Greater than three	4
Had you slept under ITNs last night	
Yes	1
No	2
Reasons for not sleeping under ITNs last night	
It is too hot to use	1
There are no mosquito	2
Nets don't suit their house	3
It is not the season	4
Don't know how to use	5
It is dirty	6
Other	7
Demonstration of proper use ITNs	
When had you get the ITNs?	
Before 6 months	1

Before 6 -12 months	2
Before 1-2 years	3
Before More than 2years	4
I don't know	5

Chapter IX- Other Additional Output Reports

9.1 Epidemiological Bulletin of WHO week 21, 25 & 27 Tigary, 2016

Introduction:

This bulletin represents the reporting period of week No.21, 25 & 27, 2015 and serves to provide information on public health emergencies and surveillance activities for evidence based decision making. The regional priority diseases and conditions under PHEM are 22 in number the one Hepatic veno-occlusive diseases are region specific reportable diseases. The bulletin shows surveillance reports existence of disease outbreaks, epidemiologic trend distribution and timeliness & completeness of report.

Measles:- In week 21, 25 & 27, 2015, there were 13 measles case were reported. 11 cases from Axum town, 1 case from maichew town and 1 case from Aduwa geter. 12 cases are from central zone and one case only from south. Only 2 cases are vaccinated, 2 cases are not vaccinated and 9 cases vaccination status are unknown. The specimen of case was taken and no death reported.

Rabies: - In week 21, 25 & 27, 2015, there were 30 rabies cases were reported. As depicted in fig.1 and from those 30 cases, 14 cases were from Endaselase town, 6 cases were report from Mekele, 5 cases were reported from Hintalo Wajirat, 3 cases were reported from Werie leke and 2 cases were reported from kola Temben. In week WHO, 27 no death was reported

Malaria:- In week 21, 25 & 27, 2015, there were 12907 MIC/RDT were done and among this 3561 malaria cases were confirmed malaria case were reported. From confirmed cases 2275 cases were PF and 1286 cases were PV. No death reported during WHO week 27, 2015.

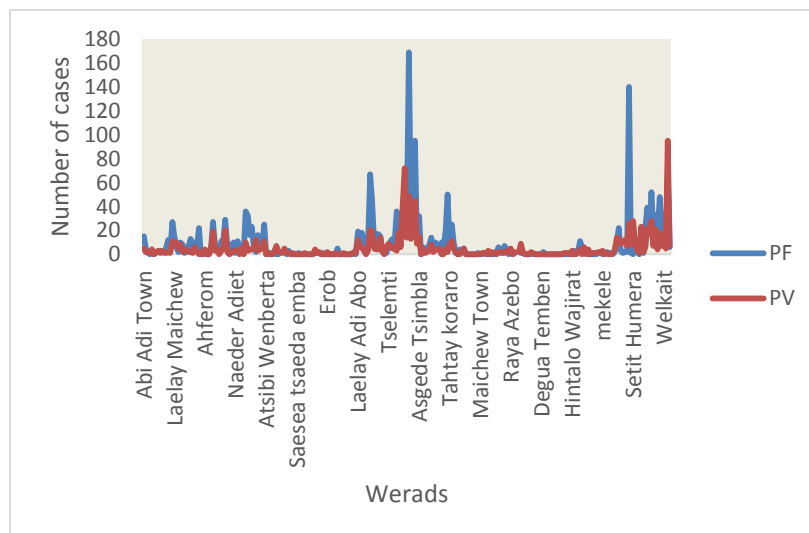


Figure 5.27. Trends of Malaria cases stratified by type of malaria in WHO week, 21, 25&27, Tigray

Typhoid fever: - In week 21, 25& 27, 2015 there was 374 OPD cases and 6 IPD cases reported. Among IPD reported cases 4 from Mekele, 1 from setete homora, and 1 from astegede sembela. There was no death reported in week 21, 25&27.

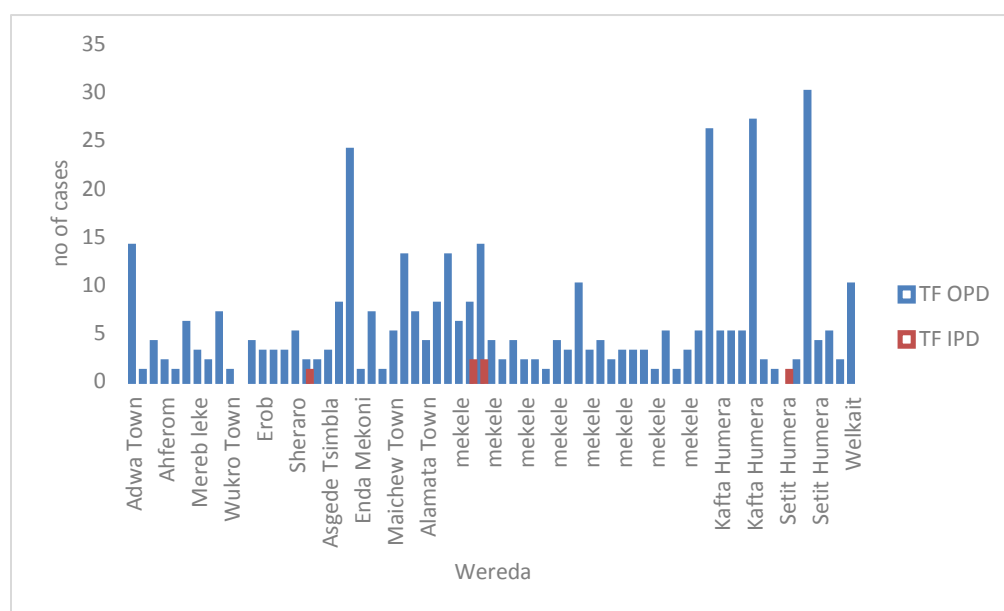


Figure 5.28 Distribution of Typhoid fever IPD and OPD cases by wereda of Tigray Region, WHO week 21, 25 & 27, 2015

Dysentery: - In week 21, 25&27, 2015 there was 1047 OPD cases and 5 IPD cases reported. Among IPD reported cases 2 from Abiadi town, 1 from Alemata town, and 2 from Mekele. There was no death reported in week those weeks

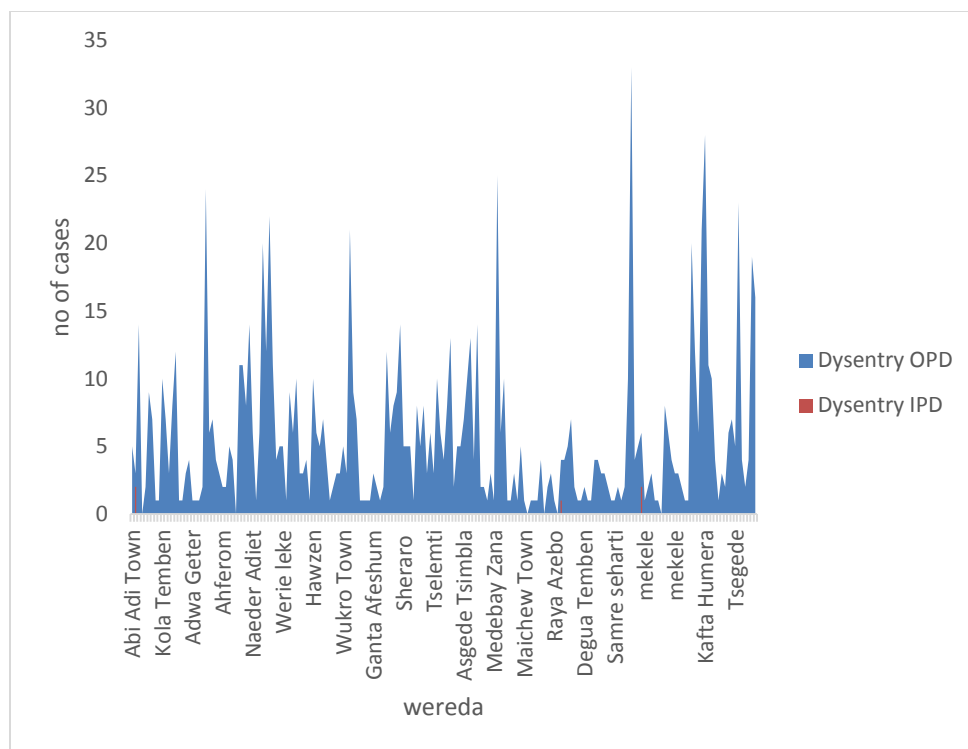


Figure 6.29 dysentery IPD and OPD cases by Wereda of Tigray region ,WHO week21,25&27,2015

SAM: - In week 21, 25&27, 2015 there was 73 OPD cases and 14 IPD cases reported. Among IPD reported cases 4 from Axum town, 1 from Wekro town, 4 from endaselase town 1 from michaw town and 4 from Mekele. There was no death reported in week those weeks.

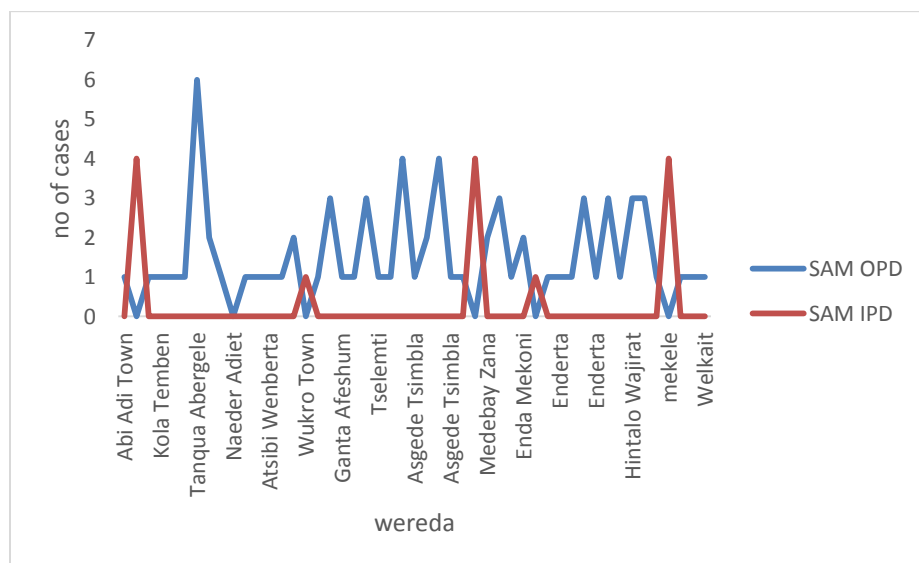


Figure 6.30 SAM IPD and OPD cases by wered of Tigray WHOweek 21,25&27,2015

Report timeliness and completeness

Every health facility & districts needs to report completely and timely for all the reportable disease under PHEM. This is also one of the indicators set by national PHEM guideline. When we see the report completeness and timeliness of central zones, N/west zone, South zone and west zones in WHO week 27, 2015 were 99.42,99.43,100, 75, 100, 87.5 98.86 &98.86 respectively. Regional completeness & Timeliness was 99.75% and 93.23% respectively.

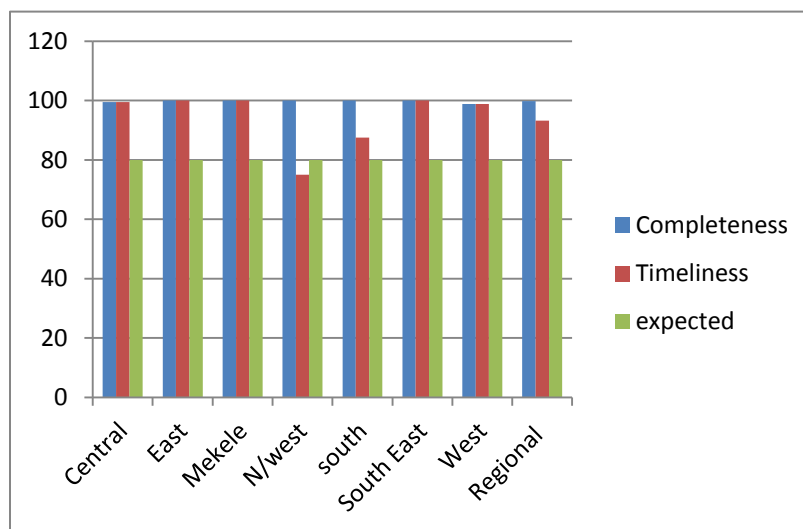


Figure 6.31 Timeliness and completeness by regional level as well as zonal level in Tigray Week 21,25,&27,2015

1. PERSONAL detail

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- + Nationality :Ethiopian
- + Sex Male
- + Age 22
- + Address TEL +251 927914988
- + Email raagali99.giddisa@gmail.com

2. EDUCATION BACKGROUND

- + Bachelor of Science in public health from Haramaya University

3. EXPERIENCE

- + Two years as public health or HO
- + Student in FELTP from December 2015-till now

4. Language

- + Afar-----Native
- + Arabic.....Native
- + English.....Excellent in reading, writing, and listening Very good in speaking

5. Computer skills

- + Basic computer skills
- + Arc GIS, EPI-info, ENA, SPSS

6. Trainings

- + Emergence nutrition training at EPHI (AA)
- + SPSS, ARCGIS at AAU-SPH

Declaration

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

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Place: Addis Ababa

Date of Submission: 20/06/2016

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

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Date _____