

Addis Ababa University College of Health Sciences

School of Public Health



Ethiopian Field Epidemiology Training Program (EFETP)

Compiled Body of Works in Field Epidemiology

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Abbreviations and Acronyms

AAU	Addis Ababa University
AWD	acute watery diarrhea
CFR	case fatality rate
EDEP	Ethiopian Dracunculiasis Eradication Program
EVD	Ebola virus disease
NMA	national metrological agency
OTP	out therapeutic program
PHEM	public health emergency management
P. M	plasmodium malarias
RDT	Rapid diagnosis test
RHB	Regional health bureau
RUTF	Ready to use therapeutic feeding
SC	stabilization center
WHO	world health organization
URTI	upper reparatory tract infection
VCT	Voluntary counseling and testing

Executive Summary

The Ethiopian Field Epidemiology Training Program is a two year post graduate training program. The training is provided in collaboration with Addis Ababa University, School of Public Health, Ministry of Health and Ethiopian Public Health Association. The program designed to work 75% of the time in service and 25% theory, it is learning by doing. For the partial fulfillment of master's in public health in field epidemiology, this summary compiled two year residency outputs; surveillance data analysis, surveillance system evaluation, health profile, outbreak investigation, manuscript and disaster report.

The document is organized in eight chapters; chapter one deals about outbreak investigation. During the residency period it has been conducted two outbreak investigation; one was measles outbreak investigation which was conducted in South Sudan refugee camp in Gambella region. On this investigation we conducted a case control study. The second outbreak investigation was a case study on food poison conducted in Kubri Kebele Lare woreda Gambella region. Chapter two explains about manuscript on measles outbreak investigation.

Chapter three explains about surveillance data analysis which was conducted Gambella region on Malaria disease. The analysis was made from the year 2015-2017 and it address the burden of rubella disease in the country by place, person and time. Similarly chapter four is about malaria surveillance system evaluation conducted in Gog wereda Gambella region. In this chapter purpose and objective of surveillance system, progress towards the objective and also attributes of the surveillance system was discussed. Chapter five is about health profile of Itang special wereda Gambella region. In this chapter health and health related data of the woreda presented.

Chapter six presents narrative summary of disaster situation which was conducted in Nuer Zone Gambella region; as part of early warning and vulnerability assessment. It was done together with partners working on health and nutrition. The assessment was conducted to identify potential problems which need humanitarian assistance in the Maher season.

Chapter seven presents Project proposal on knowledge, attitude and practice of notifiable disease surveillance and reporting. The proposal intended to do descriptive cross-sectional study in Nuer Zone Gambella regional state. Finally, chapter eight presents Public Health Emergency Lare woreda yearly bulletin prepared.

Chapter 1- Outbreak/Epidemic Investigations

1.1. Investigation of measles outbreak at Kule, Terkidi and Ngueyyiel South Sudan refugee Camps in Gambella region, Ethiopia, 2019

ABSTRACT

Introduction: Measles is a very infectious viral disease that affects children below the age of 15 years. The World Health Organization (WHO) recognizes refugees as one of the high-risk groups for measles outbreaks. On October 18, 2018, a case of illness meeting the WHO clinical case definition of measles was reported from South Sudan refugee in Gambella region and we conducted to determine the occurrence and control of the outbreak and recommend corrective actions for preventing further epidemics in the area.

Methods: 1:2 ratios Unmatched cases control study was conducted from the time period of December 1-14 /2018 at Kule, Terkidi and Ngueiyyial South Sudan refugee Camps in Gambella region, Ethiopia and Epi Info 7.1.4.0 and MS Excel 2013.

Result: The most affected camp were Kule 15 cases, followed by 10 cases, 1 case Nguenyiel and Tirkidi camps respectively. One deaths was reported giving a case fatality rate of 3,8%. Being Unvaccinated (OR= 9.96; CI (2.29-45.96) P value 0.0032), Contact with case (OR= 18.24; CI 3.52-39.62, P value 0.001) and Family size > 6 /HH (OR= 7.78; CI (2.90-95.06), P value 0.0006) are significantly associated with the measles.

Conclusion: An outbreak of measles occurred in South Sudan refugee in Gambella region and affected 3 camps. Family size > 6 members, contact history with measles cases and being unvaccinated were independent risk factors with measles. Finally, Gambella Regional health bureau and WHO Gambella sub office necessary to learn from past experiences of measles outbreaks in refugee populations in Gambella region to develop future strategies

Key words: Outbreak investigation, Measles, south sudan refugee in Gambella region, ethiopia, 2018

INTRODUCTION

Measles is a very infectious viral disease that affects children below the age of 15 years. The signs and symptoms of measles include fever, lack of appetite, cough, coryza, red eyes, and maculopapular rash, with complications such as pneumonia, blindness, brain damage, diarrhoea and croup. Measles is a systemic infection. The primary site of infection is the respiratory epithelium of the nasopharynx. Two to three days after invasion and replication in the respiratory epithelium and regional lymph nodes, a primary viremia occurs with subsequent infection of the reticuloendothelial system. The incubation period is approximately 10–12 days from exposure to the onset of fever and other nonspecific symptoms and 14 days (with a range of 7–18 days), from exposure to the onset of rash [1]. Although a vaccine has been available since 1959 [2], measles remains an important cause of morbidity and mortality in children, particularly in developing countries where more than 95% of measles-associated deaths occur [3-4]. Measles vaccination efforts have achieved major public health gains, resulting in a 74% decline in measles deaths worldwide between 2000 and 2007 from an estimated 750, 000 to 197, 000, with a decline of about 90% in the eastern Mediterranean and sub-Saharan African regions [5].

Measles is an important public health concern during disasters involving massive population displacements who end up living in camps [6]. The World Health Organization (WHO) recognizes refugees as one of the high-risk groups for measles outbreaks. Several outbreaks have been reported among refugees and other emergency settings [7-9] due to their characteristic massive population displacements, overcrowding, high population densities and low vaccination coverage [10, 11]. Overcrowding is associated with the transmission of higher infectious doses of measles virus, resulting in more severe cases of clinical disease [12], which makes measles more often the leading cause of mortality among children in refugee populations.

Emergency relief operations are often conducted during situations of widespread famine and massive population displacements in overcrowded settings, where serious problems of acute and chronic under nutrition prevail, particularly among children younger than 5 years of age [13]. Under such circumstances, immunization programmes have sometimes been implemented late, slowly or not at all. Thus, preventable outbreaks of measles have commonly occurred in refugee camps.

Despite measles control strategies in refugee settings [14, 15], case-fatality rates (CFR) as high as 34% have been reported. In contrast, measles fatality rates in stable populations are around 2% [17, 18]. Among refugees and internally displaced populations, WHO and United Nations Children's Fund (UNICEF) recommend vaccinating children aged 6 months to 14 years, with coverage exceeding 95%. However, specific target age groups during such campaigns should be determined based on the local epidemiology of the disease [17]. Vaccinating children to prevent measles is considered a cost effective priority in displaced populations living in camps [11, 19].

Overcrowding, high population density in rudimentary shelters or camps, inadequate safe water and sanitation and poor vaccination status among refugees increase the risk of infectious disease spread [21] and result in higher morbidity and mortality, especially among children.

The outbreak response was hampered by an intensified civil war, severe drought and famine, and mass exodus of Somali refugees to camps in Ethiopia and Kenya. The massive influx of vulnerable refugees combined with ongoing measles virus transmission in the region led to a large, explosive laboratory-confirmed measles outbreak in the congested camps [22].

Between 15 December and 18 July 2014, 173,752 South Sudanese asylum seekers have arrived in Gambella Region. Out of these new arrivals, 154,002 refugees have been relocated into camps while 7,397 refugees are waiting at Burubei and Pagak entry points for relocation after Level 1 registration. The majority of the new refugees have arrived through Pagak (86,875 or 50%), Burubei (40,717 or 23%) and Akobo (37,744 or 22%) entry points. [23]

Since January and until 8 July, 2014 the Gambella regional health bureau supported by UNICEF provided vitamin A to 44,789 children aged 6 months to 5 years at Pagak, Akobo and Burubei entry points and Leitchor and Kule refugee camps. On January 2014, 103,272 children between the ages of 6 months to 15 years have been vaccinated against measles while 95,926 children under 15 years have received oral polio vaccine in Burubei, Pagak and Akobo entry points and Kule, Tierkidi and Leitchor refugee camps. Number of children vaccinated against measles was 95 % coverage at the entry points (6 months to 15 years). [23]

The South Sudanese remain the largest refugee population in Ethiopia, totaling 445,481 persons at the end of June 2018. Continued violence in Upper Nile, Jonglei and Unity states resulted in 19,195 South Sudanese arrivals in the first half of 2018. The Ethiopian Government has

maintained an open door asylum policy and granted prima facie refugee status to South Sudanese refugees. Measles vaccination coverage and vitamin A supplementation for children under five reached the target of 95%. [24]

On October 18, 2018, a case of illness meeting the WHO clinical case definition for measles [25] (fever, rash, and cough, conjunctivitis) presented to the Nguennyiel camp; one day later a similar measles like illness was reported from the same camp. :

OBJECTIVES

General objective

- To investigate the occurrence and control of the outbreak and recommend corrective actions for preventing further epidemics in the area

Specific objective:

- To describe the magnitude of the outbreak
- To identify possible risk factors for measles infection
- To undertake prevention and control measures and recommend corrective actions for preventing further epidemics in the area

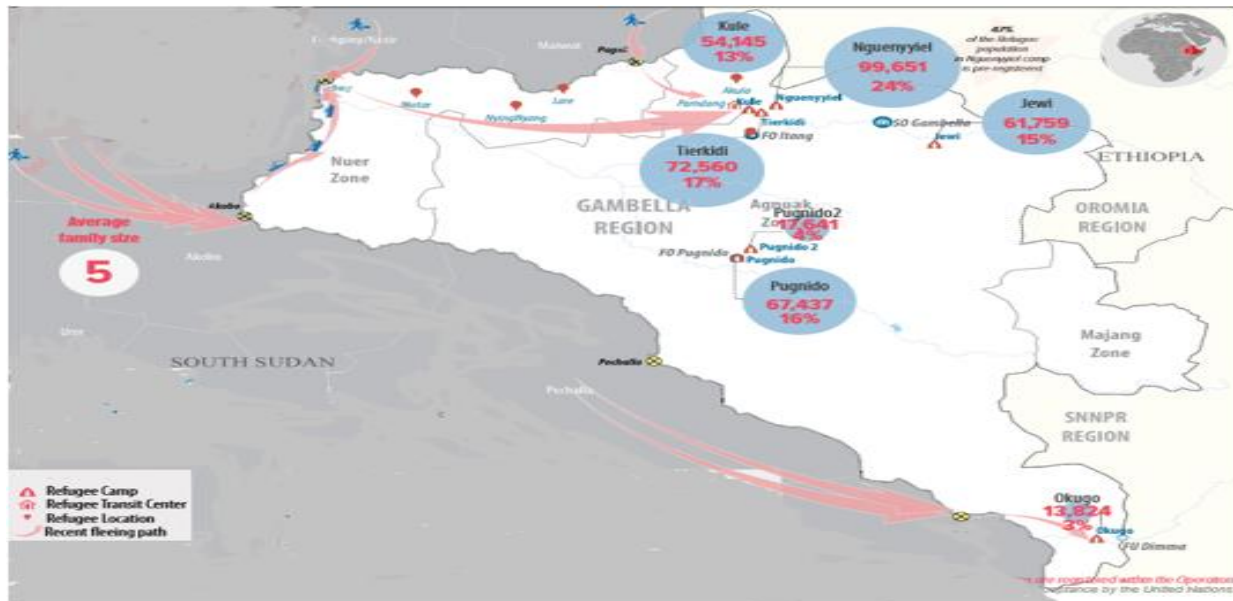
METHODS

Study area and Study Period:

There are seven refugee camps situated in Gambella Peoples' National Regional State administrative region in western part of Ethiopia. According to UNHCR 28th April 2017 report the regional had a total of 445,481 (200,466(45%) male and 245,015(55%) female) south sudan refugee population. About 19,195 South Sudanese new arrivals in the first half of 2018. The average of 5 families per house living in camps.

The refugee population displaced from Unity, Upper Nile and Jonglei states in South Sudan. Majority of refugee asylum seekers enter mainly through Akobo, Burbeiy and Pagak entry points. Some of the refugees have been settled in the existing camps, Akula village and Nipnip area. majority of the refugees have been settled in Tierkidi, Pugnido, Jewi, Nguennyiel and Kule.

The Camps located 45km East from Gambella town and 811Km West to Addis Abeba capital, ethiopia.



Map:1 map of Gambella region showing south sudan refugee camp, ethiopia, 2018

Measles outbreak investigation was carried out in three camps, named Kule, Tierkidi and Nguenyiel at south sudan refugee camp in Gambella region, Ethiopia. The study was conducted during the time period of December 1-14 /2018 at south sudan refugee in Gambella region, ethiopia.

Study design

1:2 Unmatched cases control study conducted

Data collection:

Cases and controls were interviewed using a structured questionnaire which was adapted from different literatures. For each case two controls were enrolled and During interview for child cases, we interviewed the parents or care takers

Review of cases notes was done to assess case management (treatment given to patients) from health center. Information collected included place of residence, age, sex, date first seen at the

health facility, vaccination status, risk factors for measles and outcome of illness (i.e., death). availability of refrigerator, vaccine carrier, ice pack and cold chain management were observed.

Data analysis

The data were entered and analyzed using Epi-Info7 and Microsoft Excel. All data were cleaned for completeness before analysis. Attack rates, vaccination status, and case fatality rates were calculated and results were presented using graphs, figure and tables.

The odds ratio (OR) and 95% confidence interval(CI) were estimated from univariate and multivariable logistic regression models to assess factors associated with measles cases. Variables with a P value <.05 in the multivariable model were considered to be independently associated with the outcome variable.

CASE DEFINITIONS

Suspected measles outbreaks: defined as the occurrence of five suspected measles cases in one month in a defined geographic area such as a kebele, woreda or health facility catchment.

Confirmed measles outbreaks: defined presence of three or more laboratory-confirmed measles cases in a one-month time per kebele or woreda or health facility.

A suspected measles case: any person with generalized maculopapular rash and fever plus one of the following: a cough or coryza (a runny nose) or conjunctivitis (red eyes).

Outbreak threshold:

WHO-AFRO defines an outbreak of measles as the occurrence of 3 or more IgM positive measles cases in a health facility or district in a month OR the occurrence of 5 or more reported suspected cases of measles in a health facility/district in a month.

Inclusion criteria

Cases

Camps resident who tested positive for IgM or had symptoms of measles from october18 to december14 2018 and who agreed to participate in the study was included.

Controls

A control was any camp resident during the study who was a neighbour to a case and who did not develop signs and symptoms of measles and agreed to participate was included.

Exclusion criteria

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

ETHICAL CONSIDERATIONS:

Official letter was obtained from Gambella regional health bureau. A letter was written for whom to concered health department in the camp (WHO and MSF-spain) in order to obtain approval on data collection. Verbal informed consent of each study subject parents or care takers was obtained before interviewing.

RESULT DISSEMINATION PLAN:

The study result was planned to disseminate to the respective WHO, MSF-spain and Gambella health bureau and AAU school of public health.

RESULT

Descriptive

All the line listed 26 cases had taken and 52 controls to neighbour a case and who did not develop signs and symptoms of measles were recruited into the study.

Blood specimen were collected from six cases and sent to EPHI for Measles antibody detection and the entire collected specimen six of them were positive for measles specific antibody (IgM).

One deaths was reported giving a case fatality rate was 3.8%, The attack rate is higher (29/100,000 per population) among under 5 years of age groups compared to the other age group 5-14 years (4/100,000 population) Table1.

From all measles patients 65.4% (17) have no history of vaccination. The most symptoms were maculopapular rash 100(100%), red eyes 20(76.9%), fever 16(61.5%), 10 (38.4%), pnunomia 8 (30.7%) and diarrhea 6 (23%).

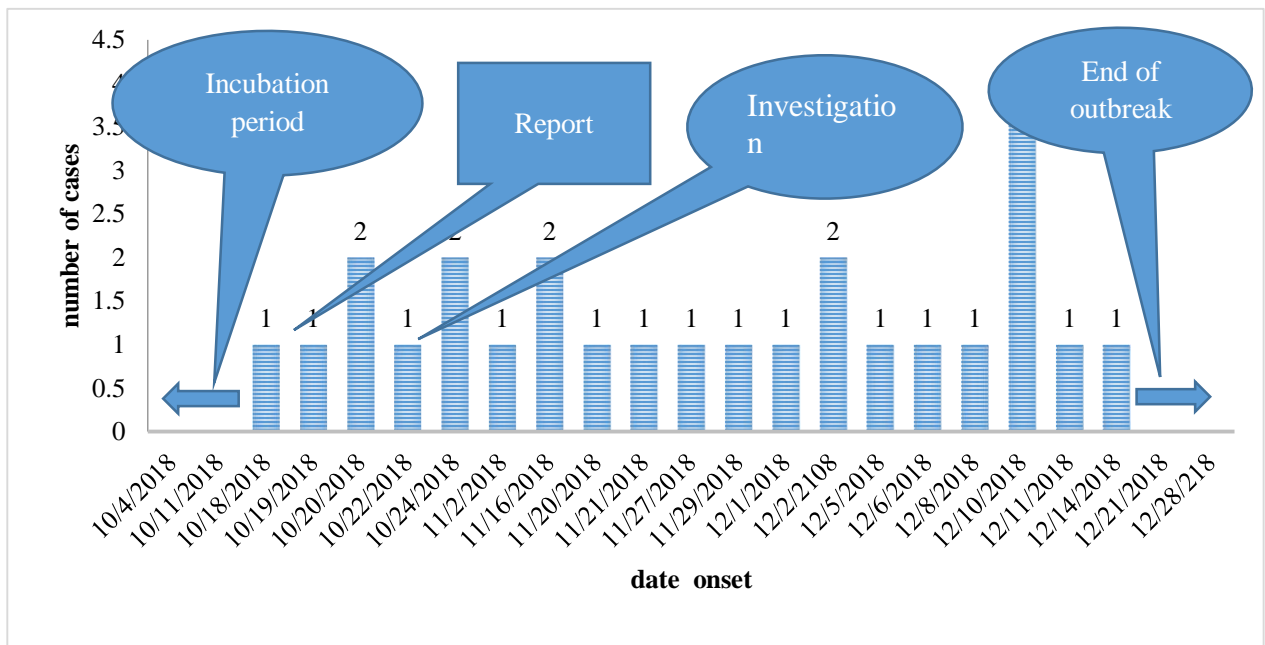


Figure: 1 Epi Curve showing the distribution of measles cases by time, south sudan Refugee in Gambella, 2018.

The first index case was reported to the regional health Bureau on october 18,2018 and additional cases were reported on october 19, 2018 and progressive cases are flactuted until it dropped to zero (see figure 1).

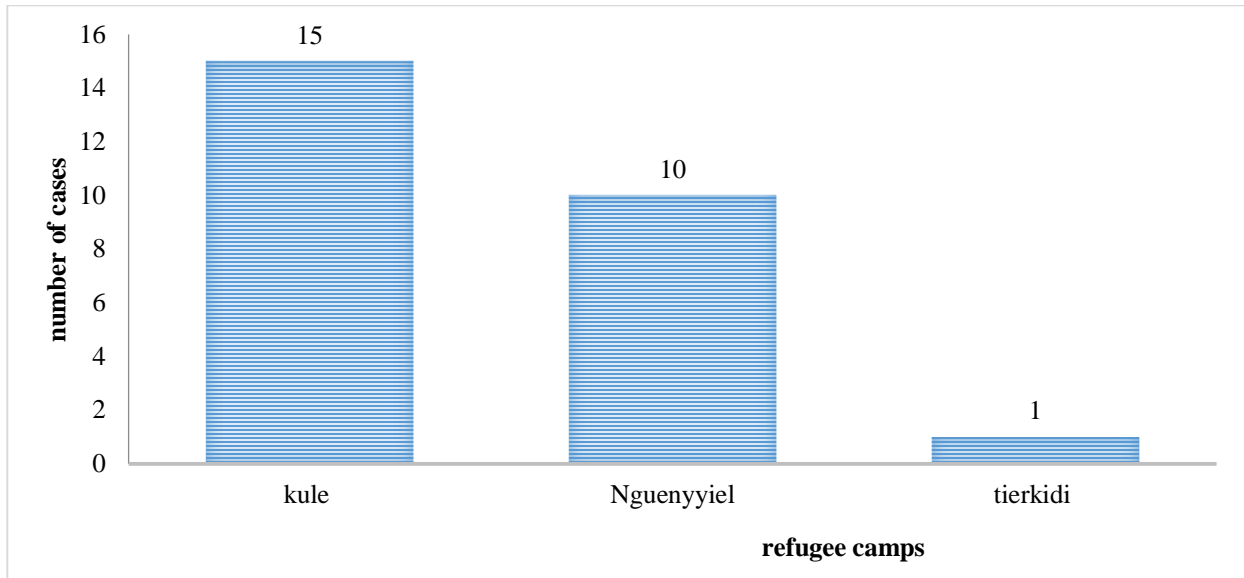


Figure: 2 Distribution of measles cases by area of residence, Gambella Refugee camp in 2018.

Three camps were affected by measles outbreak among seven camps. The most affected camp were Kule 15 cases, followed by 10 cases, 1 case Nguenyyiel and Tirkidi camps respectively.

Tables: 1 measles attack rate by age group, Gambella refugee Camp, ethiopia, October 18–December 2018, showing the highest rates of disease among age under 5 years children.

Age groups	Number of cases	Population	Attack rate/ 100,000 population
< 5 years	21(81%)	72,295	29/100,000 population
5 - 14	5(19%)	125,579	4/100,000 population
Total	26(100%)	197,874	13/100,000 population

Emergency preparedness and response to epidemics stands out as one area of close collaboration between the Regional Health Bureau, ARRA, UNHCR and the Federal Ministry of Health.

The Regional Health Bureau is in the lead for contingency planning both for refugee camps and host communities And works closely with the World Health Organization (WHO), ARRA and

UNHCR on epidemic surveillance at the border, and coordinates regularly with the Ministry of Health.

Regional Health Bureau with the support of UNICEF and WHO organized oral polio and measles vaccination for all new arrivals below the age of 15 in Gambella region, mainly in the entry points of Akobo, Burubiey, Matar and Pagak along the border with South Sudan.

In all health centers have functional refrigerator, vaccine carriers, ice packs, Measles vaccine, paracetamol, amoxicillin capsules/syrup, tetracycline, oral rehydration solutions, intravenous fluids as well as syringes and vitamin A were available.

Analytical investigation

We interviewed all 26 cases with median age of 2 years ranging from (11 months to 14 years) and 52 controls with median age of 5 years ranging from (9 month to 12 years). Regarding sex distribution, 13(50%) of cases and 31(59.62%) of controls were males.

On bivariate analysis 3 variables: being un-vaccinated (OR=14.48; (4.48-46.81) ,Family size person per HH (OR=6.86; (2.32-20.22), contact with case (OR=22.66 ;(6.17-83.27), was statically associated, however knowledge about mode of transmission of measles, History of travel two weeks prior onset of illness, knowledge about measles is a vaccine preventable disease, was not statistically associated for contracting measles.

Table: 2 Results of Bivariate Analysis of Risk factor for measles at south sudan refugee camp in Gambella region, Ethiopia, 2018.

Exposure	Categories	Case	Control	OR	95% CI
History of travel two weeks prior onset of illness	yes	6	4	3.6	(0.91-14.14)
	no	20	48		
Being unvaccinated	yes	17	6	14.48	(4.48-46.81)
	no	9	46		
Family size person per HH	>6	20	17	6.86	(2.32-20.22)
	<6	6	35		
contact with cases	yes	17	4	22.66	(6.17-83.27)
	no	9	48		
Do you Know how measles transmitted?	yes	14	24	1.36	(0.53-3.49)
	no	12	28		
Do you Know measles is vaccine preventable?				1.52	(0.56-4.14)
	yes	18	31		
	no	8	21		

For the multivariate logistic regression analysis, the risk factors that are statistically significantly associated with the illness were Vaccination status, contact with cases(Table 2).

Table: 3 Results of Multivariate analysis for Risk Factors of measles at south sudan refugee camp in Gambella region, Ethiopia, 2018.

Exposure	COR	AOR	P-Value
being unvaccinated	14.48 (4.48-46.81)	9.96 (2.29-45.96)	0.0032
Family size >6 /HH	6.86 (2.32-20.22)	7.78 (2.05-35.88)	0.0085
Contact with case	22.66 (6.17-83.27)	18.24 (2.90-95.06)	0.0006

For the multivariate logistic regression analysis, the risk factors that are statistically significantly associated with the measles were being unvaccinated Family size >6 /HH, Contact with case

RESPONSE

house-to house active case searching and follow-up conducted within refugee camps by community-based health workers from october 18, 2018 until the end of the outbreak, all patients with rash and fever identified by community based health workers were referred to MSF- spain and ARRA health center for evaluation and admission. Active case management by MSF- spain/ ARRA health center was given to control the outbreak and Cases were managed with appropriate medication (antibiotics , intravenous fluids, TTC eye ointment, ORS and vitamin A)

Measles mass vaccination campain were conducted for all under 15 years children of South Sudan refugee camp and all woredas of Gambella region. Vaccination was given to 180,065(91%) of targeted children between the ages of 9 month- 14 years in all 7 camps kebeles.

DISCUSSION

Our outbreak investigation showed that Three camps were affected by measles outbreak among seven camps. The most affected camp were Kule 15 cases, followed by 10 cases, 1 case Nguenyiel and Tirkidi camps respectively from October 18-Decnber 14/ 2018.

In refugee camps, majority of the cases sought treatment for measles at MSF- Spain and ARRA health center. The health center have own isolation centres where most measles cases were kept. Among the total cases 65.4% were not vaccinated against measles. However, in the Camps measles coverage in 2018 was 95%. The camps vaccination coverage shows the above 80% WHO minimum requirement.

The study conducted in Ethiopian refugees in Sudanese camps in 1985 were CFR rate of (32.4%) [18]. In contrast, the case fatality rate in this study was low (3.8%); The lower the case fatality rate in this finding due to the implementation of active case findings and early case detection and implementation of rapid responses (case management).

Having contact with a measles case was also found to be a risk factor. This is also supported by WHO measles Guidelines, which states that children who live in crowded places are at high risk of contracting measles, and that a person with measles can infect others for several days before he/ she develops symptoms. Measles spreads easily in places where children gather for example schools [27].

Stein-Zamir et al. in a measles outbreak reported that most cases were from big families and 70% were unvaccinated below the age of 14 years [28]. A study by Syed M et al. also showed that having more than one child at a house posed as a risk factor to contracting measles [29]. This was also reflected in our study that had the average of 5 family per house living in camps and the WHO also reports that overcrowding in developing countries is a risk factor for contracting measles [27, 29].

The WHO only recommends vaccinating children aged 9 months to 5 years in refugee settings [30]. The present study shows that about 81% of measles cases were less than 5 years old and the remaining 19% measles cases were 5 – 14 years age. This is may have remained unvaccinated children with the possibility to sustain transmissibility in camp residents, primary vaccine failures in those aged 9 months to 4 years as well as in the continuous new arrivals of displaced populations in camps.

LIMITATIONS:

information on vaccination status is obtained by asking mothers and their care givers as well as from adult patients and controls therefore recall bias could have occurred.

CONCLUSION

An outbreak of measles occurred in South Sudan refugee in Gambella region and affected 3 camps. Family size > 6 members, contact history with measles cases and being unvaccinated were independent risk factors with measles.

Finally, Gambella Regional health bureau and WHO Gambella sub office necessary to learn from past experiences of measles outbreaks in refugee populations in Gambella region to develop future strategies and budget based priority interventions towards measles control in post-disaster settings.

RECOMMENDATION

- Routine measles immunization should be strengthened
- MSF- spain and ARRA should be ensured Strong routine vaccination with regular defaulter tracing mechanisms

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1.2- Food poison outbreak at Kubri kebele in Lare wereda, Gambella, Ethiopia, 2018

ABSTRACT

Introduction: Cases of acute pesticide poisoning (APP) account for significant morbidity and mortality worldwide, especially in developing countries. The use of pesticides banned in industrialized countries, in particular, highly toxic pesticides as classified by WHO, obsolete stockpiles and improper storage techniques may provide unique risks in the developing world. On 5 November 2018, the total of 5 people were suffered from food poisoning in Kubri kebele lare wereda. These 5 persons reported to the health center soon after having diner. Team deployed to the area to investigate the outbreak and recommend possible prevention and control measures.

Method: We conducted case study and surveillance reports and medical records were reviewed on 5 November 2018.

Result: On 5 November 2018, a total of five suspected food poison cases were reported. 4 were seriously ill were admitted and responded to the treatment and discharged home after three day admission. One deaths were reported the cases fatality was 20%. Main food poison symptom was vomiting, convulsion associated of shivering, fever, restless, respiratory insufficiency, convulsion associated of shivering, restless and sweeting whole part of body, mild generalized muscle weakness and abdominal pain

Conclusion: According to the clinical observations; food poison outbreaks occurred in Kubri kebele in Lare wereda On 5 November 2018. The contributing factors for this outbreak were patients with psychological disorder and improper handling of pesticides.

Key word: food poison, outbreak investigation, lare wereda, Ethiopia

INTRODUCTION

Cases of acute pesticide poisoning (APP) account for significant morbidity and mortality worldwide, especially in developing countries. There are no reliable estimates as to how many people per year suffer from pesticide-related health effects [1, 2].

Studies in developed countries have demonstrated the annual incidence rates of APP in agricultural workers to be as much as 18.2 per 100 000 full time workers [3] and 7.4 per million among school children [4]. Yet, cases of APP may be the result of various causes in different regions of the world. In developing countries, where there is insufficient regulation, lack of surveillance systems, less enforcement, lack of training, inadequate access to information systems, poorly maintained or nonexistent personal protective equipment, and larger agriculturally-based populations, the incidences are expected to be higher[5]. The use of pesticides banned in industrialized countries, in particular, highly toxic pesticides as classified by WHO, [6] obsolete stockpiles and improper storage techniques may provide unique risks in the developing world [7, 8]. In some countries, such as China and Sri Lanka [9], self-poisoning with pesticides is a particular problem. Studies from Sri Lanka regarding self-poisoning reveal an APP incidence rate of approximately 180 per 100 000[10].

Studies from developing areas in Central America (El Salvador and Nicaragua) have indicated an overall incidence rate of 35 per 100 000 for APP in the general population [11] and 17.8 per 100 000 occupationally-related APP in Thailand [12]. In Belize, it has been estimated that 17 pesticide poisonings per 100 000 residents and 4142 preventable poisonings occur each year [13]. Previous research has demonstrated that reported occupational and non-intentional causes vary from 10% to 50% in developing countries [14]. The reason for this variation is unclear, but is likely contributed to by inconsistent recording methodology and lack of a standard case definition for an APP [14]. These variations may result in an underestimation of the true incidence of APP.

Since occupational and non-intentional pesticide poisoning require a specific set of prevention and control measures separate from those required for suicidal exposures, it is important to accurately determine the magnitude of the problem through better estimates and identification of cases and deaths resulting from APP. Several challenges exist in attempting to determine the

scope of the problem: misdiagnosis by health-care providers, lack of readily accessible health care in rural populations, exclusion of non-hospitalized cases, resigned acceptance by workers that adverse health effects are expected [15], and the fact that less severe cases of APP may not seek health care. Additionally, suicidal ingestions of pesticides account for the most severe cases of poisoning and consequently hospital-based studies may underestimate the overall (occupational/non-intentional) incidence of APP [16]. Further, many developing countries lack the resources to establish and maintain the necessary surveillance programmes and to obtain confirmatory laboratory testing for all possible cases of APP; therefore, the ability to identify a poisoning may differ between developing and developed countries.

On 5 November 2018, the total of 5 people were suffered from food poisoning at Kubri kebele in lare wereda. These 5 persons reported to the health center soon after having diner, with complaints of nausea, vomiting, abdominal pain and sweating. The index case reported within one hours after having diner.

OBJECTIVES

General objective

- The main objective of this study is to describe source of food poison in Kubri kebele Lare woreda 2018

Specific objectives

- To describe the incident of food poison in Kubri kebele.
- To describe the data in terms of place, time and person

MATERIAL AND METHODS

Study area and period

Kubri kebele is one of 22 kebeles in lare woreda. It has the Total population is 1,342; of this 805 are males and 537 are females. The study was conducted from November 6- 13, 2018



Map: 2 MAP of Nuer zones showing food poisoning outbreak in Lare woreda

Study design

We conducted case study and surveillance reports and medical records were reviewed.

Case definition

An acute pesticide poisoning is any illness or health effect resulting from suspected or confirmed exposure to a pesticide within 48 hours. APP resulting from suicide, homicide, occupational and non-intentional exposures. Health effects may be local (dermal and ocular) and/or systemic. This includes respiratory, neurotoxic, cardiovascular, endocrine, gastrointestinal, nephrotoxic and allergic reactions. The definition of a case can be classified as: probable, possible or unlikely/unknown [11, 20, 21].

A probable case refers to a case that is presumptive, substantiated or “more likely than not” caused by exposure to a pesticide. The **“unlikely/unknown”** case definition represents cases for which there is unlikely or unknown causality or exposure. This category is arrived at by the requirement that the case meet only one criteria in *any* of the categories. Clinical evaluation, carried out by health-care provider or trained personnel with some knowledge of the health effects caused by exposure to pesticides, is advised when making a determination about health effects [11, 20, 21].

A distinction is to be made between signs and symptoms. A physical sign is an objective finding that can be described by a health-care provider (e.g. diaphoresis, tachycardia, vomiting). A symptom is a subjective complaint reported by a patient (e.g. nausea, headache, dizziness). It is important to keep in mind that since all the possible toxic effects of each pesticide are not entirely known, the possibility may still exist that certain symptoms represent new, as yet undocumented, health effects from a pesticide [11, 20, 21].

RESULT

Case reports

On 5 November 2018, a total of five suspected food poison were reported. Among Those persons had taken diner were meat that had been prepared from cookhouse. Of those affected, 4 were seriously ill and had to be admitted and one death were reported giving the cases fatality which was 20%.

All patients were taken to Lare healthcare center and received treatment for their symptoms but one patient pass away immediately arrived health center. However, the condition of the remaining four patients deteriorated, their level of consciousness fell, and they developed respiratory distress and generalized muscular weakness. The midnight the same day they were referred to Gambella General Hospital. Finally, four patients were responded to the treatment and were discharged home after three day admission from Gambella hospital.

The shared diner Food samples and samples of vomitus and stools of the cases were not taken because, the left over foods had given to the Dog but the dog was death after eaten all remaining food.

Case 1

A 29 year old man who has psychological disorder. He mixed pesticide agent with oil putted in prepared meat in cookhouse; after few hour later the five people had eaten the prepared meat with him then he developed sever vomiting, severe diarrhea, fever, sweating from all body part, loss of consciousness, and hypotension. He was treated with intravenous fluids, antiemetic, and antibiotics but was not improved. ; Finally he died On 5 November 2018 in lare health center.

Cases 2

A 26 year's old man presented with vomiting, convulsion associated of shivering, fever, restless, respiratory insufficiency, convulsion associated of shivering, restless and sweating whole part of body. The clinicians diagnosed him as food poison and admitted to medical ward Gambella Hospital on 6 November 2018. Treated him with Gastric lavage, intranasal oxygen, catheterized, ceftriaxone 1gm BID, Diazepam 10mg PRN and cimetidine 400 mg IV BID. Finally, he responded to the treatment and were discharged home after three day admission.

Cases 3, 4 and 5

Three patients developed mild generalized muscle weakness, abdominal pain and vomiting and their level of consciousness was reduced. They were admitted to the emergency ward in Gambella hospital then three of them were responded to treatment for their symptoms, and discharged to home after 24 hour of admission.

DISCUSSION

Latest estimates from the World Health Organization indicate that each year one million serious accidental poisonings occur worldwide [2]. In the present outbreak, as the results of case 1 old men who had psychological disorder as family said. This old man mixed pesticide agent with oil putted in prepared meat in cookhouse; after few hour later the five people had eaten the prepared meat. They developed signs and symptoms of food poison.

The main symptoms reported were vomiting, convulsion associated of shivering, restless, diarrhea, abdominal pain, sweating, weakness and fever. In health institutions, gastrointestinal decontamination Gastric lavage and antiemetic (cimetidine and antacid syrups) and antibiotics were used to treat acute poisoning patients.

The numerous negative health effects that have been associated with chemical pesticides include, among other effects, dermatological, gastrointestinal, neurological, carcinogenic, respiratory, reproductive, and endocrine effects.

Furthermore, high occupational, accidental, or intentional exposure to pesticides can result in hospitalization and death [17].

A similar observation has been made by Psychiatric problems were identified as the most common reasons for acute poisoning [18].

The community living this remote kebeles have unsanitary living conditions, lack of access to clean water and storage of foods and low educational levels among consumers and food handlers. They also uses some chemical agent for agricultural, animal and environmental protection but lack of awareness how to handling and storing.

In most cases, the needed care is symptomatic, the hospital lengths of stays are less than two days and the primary outcome is good [19]. In our current review, the average hospital length of stay was 3 days (1–3 days) and case fatality rate was 20%.

The incident we describe, the severity of the illness in case 1 was high lead to dead but the other four patients developed mild clinical symptoms and were responded to the treatment and discharged home after three day admission. The severity case1 may be depending on the amount of the toxic agent consumed in the food and the general health status of affected individuals.

CONCLUSION

According to the clinical observations; food poison outbreaks occurred in Kubri kebele in Lare wereda On 5 November 2018. The contributing factors for this outbreak were patients with psychological disorder and improper handling of pesticides. Therefore, Lare worda and Gambella regional health bureau should Strict regulations regarding the storage and sale of pesticides chemicals agent and Awareness forwarded to users of these agents on proper handling of chemicals agents. Patients with suicidal poisoning should undergo psychiatric consultation to reduce the risk of future attempts in the reduction of morbidity and mortality.

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Chapter 2- Scientific Manuscripts for Peer reviewed Journals

2.1 Investigation of measles outbreak in south Sudan refugee in Gambella region, Ethiopia, December 2018

ABSTRACT

Introduction: The World Health Organization (WHO) recognizes refugees as one of the high-risk groups for measles outbreaks. On October 18, 2018, a case of illness meeting the WHO clinical case definition for measles presented to the Nguennyiel camp in south Sudan camp in Gambella region. We conducted measles outbreak risk factors and camp preparedness and response of outbreak in the future.

Methods: (1:2) unmatched cases control study conducted and structured questionnaire was used to interview cases and controls. The odds ratio (OR) and 95% confidence interval(CI) were estimated from univariate and multivariable logistic regression models to assess factors associated with measles cases.

Discussion: We interviewed all 26 cases and 52 control. the case fatality rate of 3.8 %, The attack rate is higher (29/100,000/populations) among under 5 years of age groups compared to the other age groups 5 – 14 years (4/100,000 populations). From all measles patients 65.4% have no history of vaccination. On multivariate logistic regression analysis, the risk factors that are significantly associated with the illness were being unvaccinated, Contact with case and Family size > 6 /HH

An outbreak of measles occurred in South Sudan refugee in Gambella region and affected 3 camps. Finally, Gambella Regional health bureau and WHO Gambella sub office necessary to learn from past experiences of measles outbreaks in refugee populations in Gambella region to develop future strategies

INTRODUCTION

Measles is a very infectious viral disease that affects children below the age of 15 years. The signs and symptoms of measles include fever, lack of appetite, cough, coryza, red eyes, and maculopapular rash, with complications such as pneumonia, blindness, brain damage, diarrhoea and croup [1].

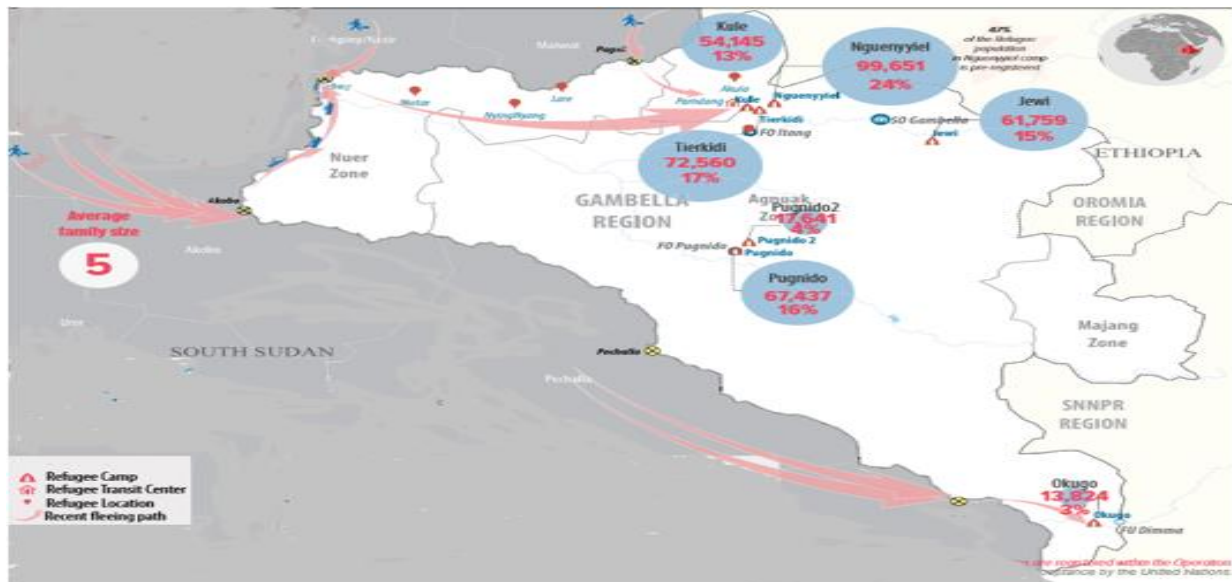
Measles is an important public health concern during disasters involving massive population displacements who end up living in camps [2]. The World Health Organization (WHO) recognizes refugees as one of the high-risk groups for measles outbreaks. Several outbreaks have been reported among refugees and other emergency settings [3-5] due to their characteristic massive population displacements, overcrowding, high population densities and low vaccination coverage [5].

On October 18, 2018, a case of illness meeting the WHO clinical case definition for measles [6] (fever, rash, and cough, conjunctivitis) presented to the Nguennyiel camp in south sudan refugee in Gambella region; one day later a similar measles like illness was reported from the same camp. We conducted the occurrence and control of the outbreak and recommend corrective actions for preventing further epidemics in the area

METHODS

Study area:

Measles outbreak investigation was carried out in three camps, named Kule, Tierkidi and Nguennyiel at south sudan refugee camp in Gambella region, Ethiopia. The Camps located 45km east from Gambella town and 811Km east to Addis Abeba capital, ethiopia.



Map: 2 map of Gambella region showing south sudan refugee camp, ethiopia, 2018

Study Period:

The study was conducted during the time period of December 1-14 /2018 at south sudan refugee in Gambella region, ethiopia.

Study design

A 1:2 unmatched case control study was conducted. A **case** status was determined as any person with fever, maculopapular generalized rash and cough, coryza (runny nose) or conjunctivitis. **Controls** were enrolled in the study from the area were cases enrolled without the history of measles.

Data collection:

Cases and controls were interviewed using a structured questionnaire which was adapted from different literatures. For each case two controls were enrolled and during interview for child cases, we interviewed the parents or care takers

Review of cases notes was done to assess case management (treatment given to patients) from health center. Information collected included place of residence, age, sex, date first seen at the health facility, vaccination status, risk factors for measles and outcome of illness (i.e., death). Availability of refrigerator, vaccine carrier, ice pack and cold chain management were observed.

Data entry and Statistical analysis

The data were entered and analyzed using Epi-Info7 and Microsoft Excel. All data were cleaned for completeness before analysis. The results were presented using graphs and tables. The odds ratio (OR) and 95% confidence interval(CI) were estimated from univariate and multivariable logistic regression models to assess factors associated with measles cases and Variables with a P value $<.05$ in the multivariable model were considered to be independently associated with the outcome variable.

ETHICAL CLEARANCE

Official letter was obtained from Gambella regional health bureau and A letter was written for whom to concerned health department in the camp (WHO and MSF-spain) in order to obtain approval on data collection.

RESULT

A total of 26 cases and 1 deaths measles outbreak cases from October 18 -December 14/2018 were reported.

Blood specimen were collected from six cases and sent to EPHI for Measles antibody detection and the entire collected specimen six of them were positive for measles specific antibody (IgM).

We interviewed all 26 cases with median age of 2 years ranging from (11months to 14 years) and 52 controls with median age of 5 years ranging from (9 month to 12 years). Regarding sex distribution, 13(50%) of cases and 31(59.62%) of controls were males.

The case fatality rate of 3.8 %, The attack rate is higher (29/100,000/populations) among under 5 years of age groups compared to the other age groups 5 – 14 years (4/100,000 populations). From all measles patients 65.4% have no history of vaccination. The most symptoms were maculopapular rash 100(100%), red eyes 20(76.9%), fever 16(61.5%), 10 (38.4%), pneumonia 8 (30.7%) and diarrhea 6 (23%).

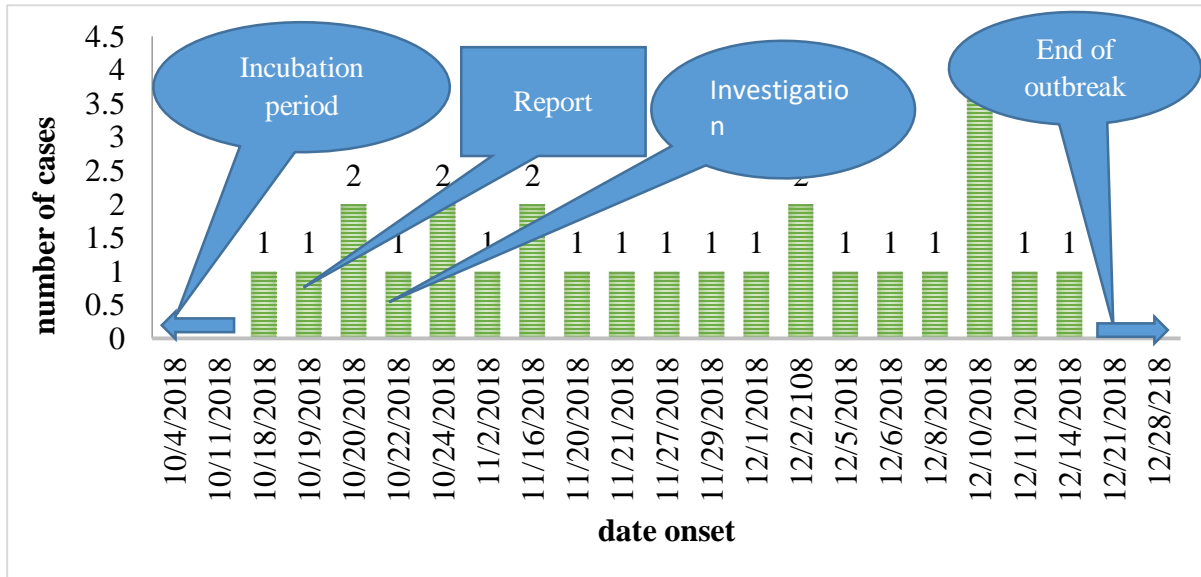


Figure: 3 Epi Curve showing the distribution of measles cases by time, south sudan Refugee in Gambella, 2018.

The first index case was reported to the regional health Bureau on October 18, 2018, and additional cases were reported on October 19, 2018, and progressive cases fluctuated until they dropped to zero.

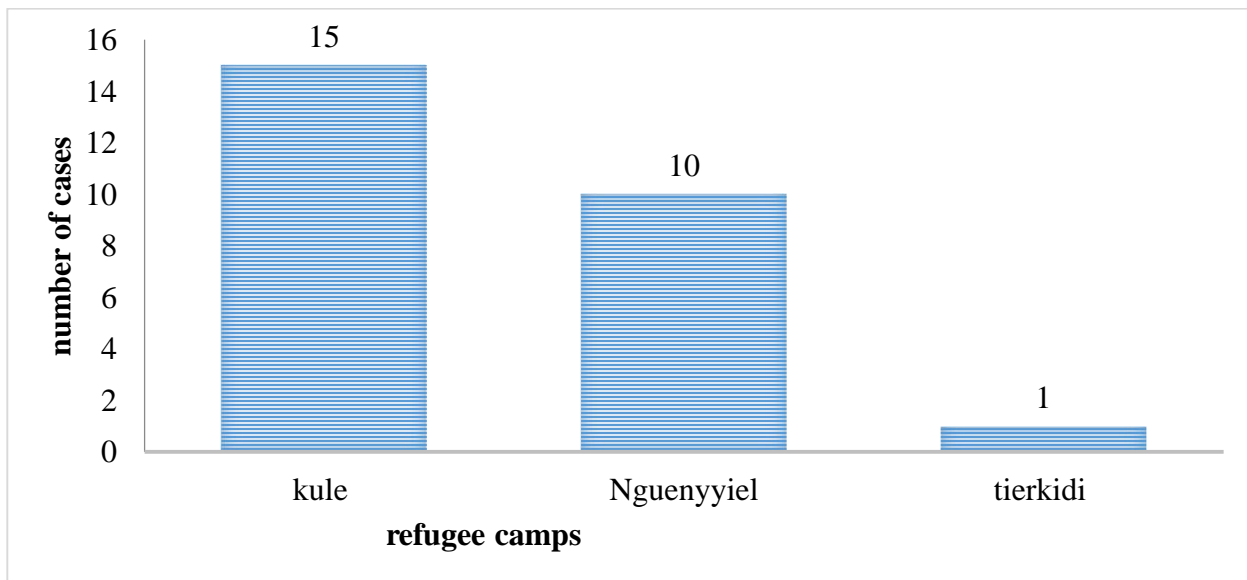


Figure: 4 Distribution of measles cases by area of residence, Gambella Refugee camp in 2018.

The most affected camp were Kule 15 cases, followed by 10 cases, 1 case Nguenyiel and Tirkidi camps respectively.

In all health centers have functional refrigerator, vaccine carriers, ice packs, Measles vaccine, paracetamol, amoxicillin capsules/syrup, tetracycline, oral rehydration solutions, intravenous fluids as well as syringes and vitamin A were available.

On bivariate analysis 3 variables: being un-vaccinated (OR=14.48; CI(4.48-46.81) Family size person per HH (OR=6.86; CI(2.32-20.22), contact with case (OR=22.66; CI(6.17-83.27), was statically associated, however knowledge about mode of transmission of measles OR=1.36; CI(0.53-3.49), History of travel two weeks prior onset of illness OR=3.6 CI(0.91-14.14), knowledge about measles is a vaccine preventable disease OR=1.52; CI(0.56-4.14), was not statistically associated for contracting measles.

On multivariate logistic regression analysis, the risk factors that are significantly associated with the illness were being unvaccinated (OR= 9.96; CI (2.29-45.96) P value 0.0032), Contact with case (OR= 18.24; CI 3.52-39.62, P value 0.001) and Family size > 6 /HH (OR= 7.78; CI(2.90-95.06), P value 0.0006)

Response conducted: Cases were managed with appropriate medication, Vaccination campaign was conducted and 180,065 (91%) of targeted children between the ages of 9 month- 14 years were vaccinated.

DISCUSSION

Our outbreak investigation showed that Three camps were affected by measles outbreak among seven camps. The most affected camp were Kule 15 cases, followed by 10 cases, 1 case Nguenyiel and Tirkidi camps respectively from October 18-Decnber 14/ 2018.

In refugee camps, majority of the cases sought treatment for measles at MSF- Spain and ARRA health center. The health center have own isolation centres were most measles cases were kept. Among the total cases 65.4% were not vaccinated against measles. However, Camps measles coverage in 2018 was 95%. The camps vaccination coverage shows the above 80% WHO minimum requirement.

The study conducted in Ethiopian refugees in Sudanese camps in 1985 were CFR rate of (32.4%) [8]. In contrast, The case fatality rate in this study was 3.8 % ; The lower the case fatality rate in

this finding due to the implementation of active case findings and early case detection and implementation of rapid responses (case management).

Having contact with a measles case was also found to be a risk factor. This is also supported by WHO measles Guidelines, which states that children who live in crowded places are at high risk of contracting measles, and that a person with measles can infect others for several days before he/ she develops symptoms. Measles spreads easily in places where children gather for example schools [9].

Stein-Zamir et al. in a measles outbreak reported that most cases were from big families and 70% were unvaccinated and below the age of 14 years [10]. This was also reflected in our study that had the average of 5 family per house living in camps and the WHO also reports that overcrowding in developing countries is a risk factor for contracting measles [9, 11].

The WHO only recommends vaccinating children aged 9 months to 5 years in refugee settings [13]. The present study shows that about 81% of measles cases were less than 5 years old and the remaining 19% measles cases were 5 – 14 years age. This may have remained unvaccinated children with the possibility to sustain transmissibility in camp residents, primary vaccine failures in those aged 9 months to 4 years as well as in the continuous new arrivals of displaced populations in camps.

This investigation has some limitations: information on vaccination status is obtained by asking mothers and their care givers as well as from adult patients and controls therefore recall bias could have occurred.

An outbreak of measles occurred in South Sudan refugee in Gambella region and affected 3 camps. Family size > 6 members, contact history with measles cases and being unvaccinated were independent risk factors with measles. Finally, Gambella Regional health bureau and WHO Gambella sub office necessary to learn from past experiences of measles outbreaks in refugee populations in Gambella region to develop future strategies

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Chapter 3- Surveillance data analysis report

3.1 Malaria Surveillance data analysis from 2015-2017 in Gambella region 2018

Abstract

Background: An estimated 198 million cases and 584, 000 deaths of malaria were occurred in 2013 worldwide. Out of all deaths of malaria worldwide 90% is occur in Africa. Approximately 52 million people (68%) live in malaria-endemic areas in Ethiopia. Malaria is remained the leading cause of morbidity among both adult and children in Gambella region for the last couple of years. Malaria Surveillance data analysis is an important for detecting the health condition and unexpected increases or decreases in Health related occurrence

Method: Descriptive cross-sectional review of secondary data of malaria cases based reported from all woredas in Gambella region during 2015-2017 G.C. The study was conducted from February 15-30, 2018

Results: Overall malaria burden three years retrospective study was conducted and a total of 509,010 blood film seen in all wereda in Gambella region. Among these, a total of laboratory of 242,460 confirmed malaria cases where reported and malaria cases incidence increased during 2015-2017G.C. there were increasing relative numbers of Plasmodium falciparum among confirmed malaria case. From these, 57,445 to 84,816 of cases were test positive for plasmodium falciparum during calendar years.

Conclusion: The last three years malaria incident were increased and it is still a major health problem in Gambella region. This is may be due to climatological differences, altitude variation. Therefore, to sustain effective control of malaria in this area will require

INTRODUCTION

Malaria in humans is caused by infection with one or more of several species of Plasmodium (i.e., *P. falciparum*, *P. vivax*, *P. ovale*, *P. malariae*, and occasionally other Plasmodium species) parasites. The parasite is transmitted by the bite of an infective female Anopheles mosquito. *P. falciparum* and *P. vivax* species cause the most infections worldwide (1).

The **signs and symptoms** of malaria illness are varied, but the majority of patients have fever. Other common symptoms include headache, back pain, chills, increased sweating, myalgia, nausea, vomiting, diarrhea, and cough. A diagnosis of malaria should always be considered for persons with these symptoms who have traveled to an area with known malaria transmission. Malaria also should be considered in the differential diagnosis of persons who have fever of unknown origin, regardless of their travel history (1).

It is transmitted by infected female anopheles mosquito. Rainfall, temperature and humidity play a significant role in the transmission of malaria. It is the most important of the life-threatening parasitic disease of humans with enormous medical, economical and emotional impacts in the world (2).

An estimated 198 million cases and 584, 000 deaths of malaria were occurred in 2013 worldwide. Out of all deaths of malaria worldwide 90% is occur in Africa. In Africa, malaria constitutes 10% of the continent's overall disease burden and it is a leading cause of under-five mortality. Approximately 52 million people (68%) live in malaria-endemic areas in Ethiopia, chiefly at altitudes below 2,000 meters (4)

In Ethiopia, malaria is a leading public health problem. The disease was reported as the primary cause of health problems, accounting for 17 percent of outpatient visits, 15 percent of hospital admissions, and 29 percent of in-patient death. Approximately 52 million people (68%) live in malaria risk areas in Ethiopia, primarily at altitudes below 2,000 meters. The transmission occurs following two rainy seasons, from June to September and a shorter April to May rains (5).

In Gambella Region, malaria is a major public health problem and has been consistently reported as the first leading causes of morbidity and mortality among 21 diseases or conditions under surveillance. Malaria also ranked first among the ten top cause of morbidity in the region.

RATIONALE OF THE STUDY

Gambella region is one of the malaria endemic regions in the country with stable and year round transmission. The low land altitude in the region, below 2000 meters above sea level, and river basins favors the mosquito breeding which results in large number of malaria cases throughout the year. Malaria is remained the leading cause morbidity among both adult and children in the region for the last couple of years

Malaria Surveillance data analysis is an important for detecting the health condition and unexpected increases or decreases in Health related occurrence, monitoring condition on trends of the disease and evaluating the effectiveness of disease condition control programs and policies.

OBJECTIVES

General objective

- To determine trends and burden of malaria disease at Gambella region from 2015-2017 G.C

Specific objectives

- To describe the incident of malaria disease at Gambella region.
- To describe the data in terms of place, time.

METHOD AND MATERIALS

Study area and period

Gambella Region is one of the 9 regional states of Ethiopia located 766 KMs southwest of Addis Ababa, the capital of Ethiopia and the Region has total population of 435,999. The region has bordered in the North West, western and south by South Sudan, in the north east and eastern by Oromia, and in the south east by SNNPR. The study was conducted from February 15-30, 2018



Map: 3 map of Ethiopia showing Gambella regions.

Study design

Descriptive cross-sectional review of secondary data of malaria cases based reported from all woredas in Gambella region during 2015-2017G.C.

Data Source

- Malaria surveillance Secondary data was extracted from regional data base from (PHEM) department and required variables to the study objectives

Case definition for malaria:

- **Confirmed malaria case:** Symptomatic or asymptomatic infection that occurs in a person who has laboratory-confirmed by microscopy or RDT
- **Suspected malaria case:** at community level: Any person with fever or fever with headache, rigor, back pain, chills, sweats, myalgia, nausea, and vomiting diagnosed clinically as malaria.

Statistical data analysis

The data that obtained from PHEM department was skimmed for its completeness entered and cleaned in computers via MS Excel then the required variables were rearranged finally, Descriptive Analysis and outputs were displayed in graph and tables.

ETHICAL CLEARANCE

Official permission was obtained from Gambella regional PHEM department to access surveillance data.

DISSEMINATION OF RESULT

The output of that three years surveillance data analysis was be presented to Gambella Region health Bureau PHEM department, and AAU department of public health and field epidemiology department.

Finally the finding from that study will help the decision makers to take appropriate public health action and intervention depending up on the result obtained.

Result

Total suspected/confirmed Malaria Cases

Overall malaria burden three years retrospective study was conducted in Gambella regions were a total of 509,010 blood film seen in all wereda in Gambella region. Among these, a total of laboratory of 242,460 confirmed malaria cases where reported and malaria cases incidence increased during 2015-2017G.C.

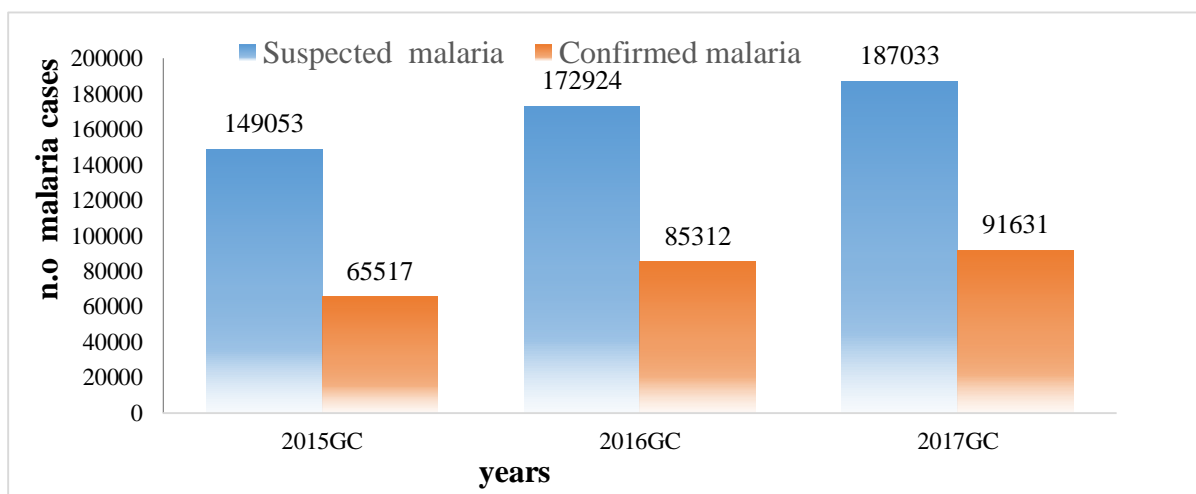


Figure: 5 Reported Total Malaria of suspected/confirmed Cases by years in Gambella region study calendar years

Annual incidence of malaria cases

Table: 4 Reported annual incidence for malaria indicators from IDSR surveillance data, GC calendar year (2015-2017).

S.N	Cases	2015	2016	2017	Average
1	Malaria in-patients/10,000	47.9	49.7	51.7	49.8
2	Malaria in-patient deaths/100,000	8.3	1.18	2.02	3.83
3	Plasmodium falciparum cases/1000	140.4	180.6	194.5	171.83
4	Plasmodium Vivax cases/1000	19.8	21.5	15.6	18.96
5	Confirmed malaria cases/1,000	160.2	202.1	210.1	190.8

Average estimated annual incidence of reported confirmed malaria cases overall population was 204.56 per 1, 000 per year overall the three calendar years (2015 -2017). Reported malaria in-patient admissions and deaths averaged 49.8 per 10, 000 and 3.83 per 100,000 per year respectively.

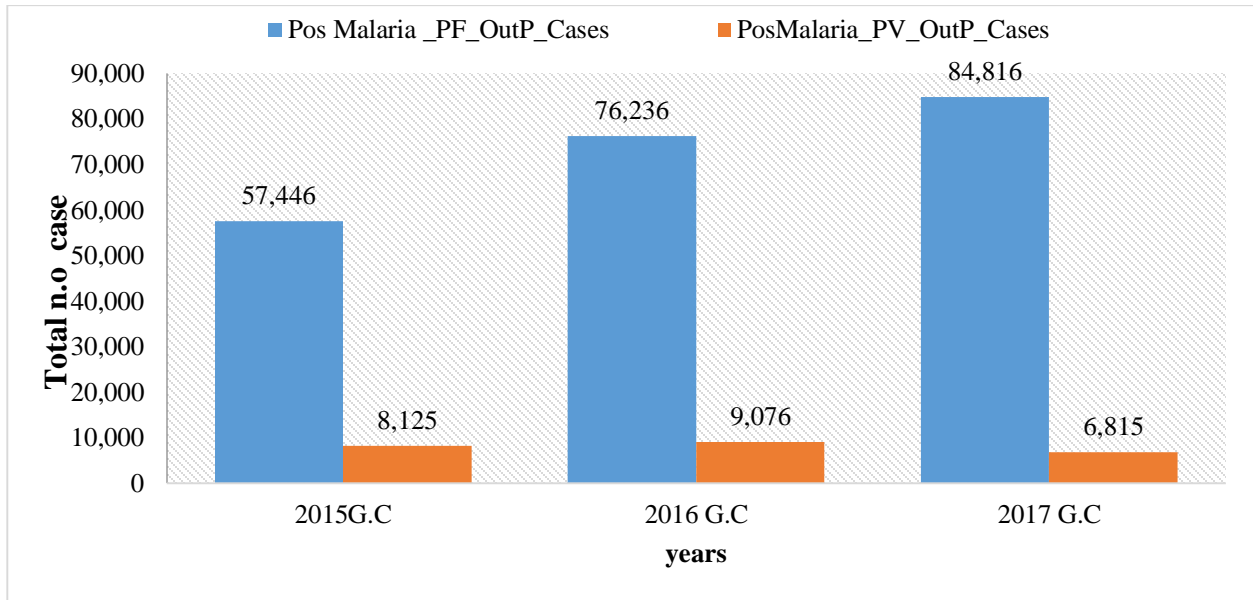


Figure: 6 Malaria trend Plasmodium species by years in Gambella regions 2015-2017

There were increased relative numbers of Plasmodium falciparum among confirmed malaria case from 57,446 to 84,816 of cases were test positive for plasmodium falciparum during calendar years. However, there was no clear declining trend in the number of PV cases over this time period.

Seasonal variation of malaria cases

Although malaria occurred in all months, the incidence had shown fluctuating trend across months. The malaria case trend were shown highest distribution malaria cases at May to august. The most peak season case report received on May to July of 2017 GC and July to October of 2016 GC.

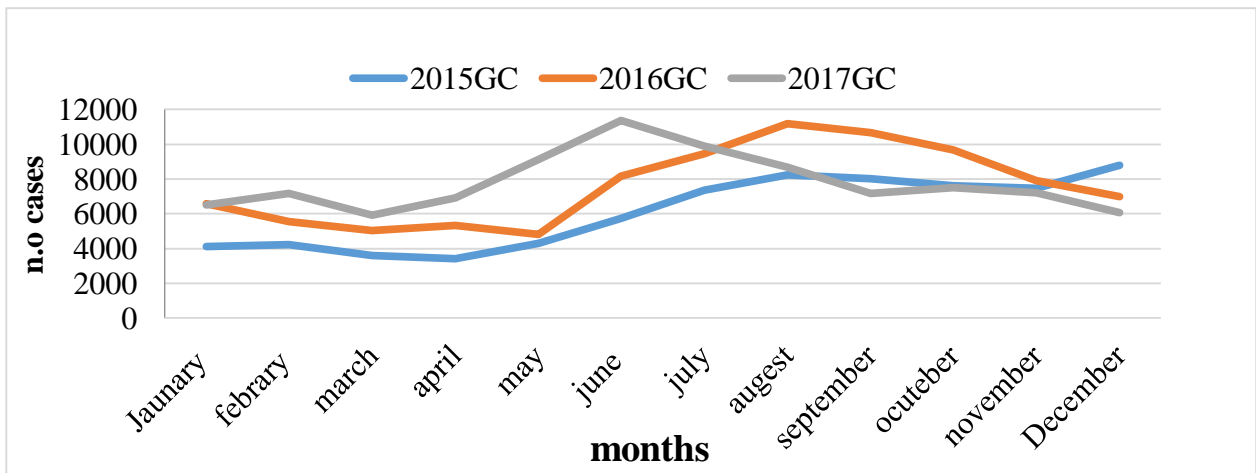


Figure: 7 seasonal variation of malaria incidence by month in Gambella regions, Ethiopia

Outpatient and inpatient malaria cases

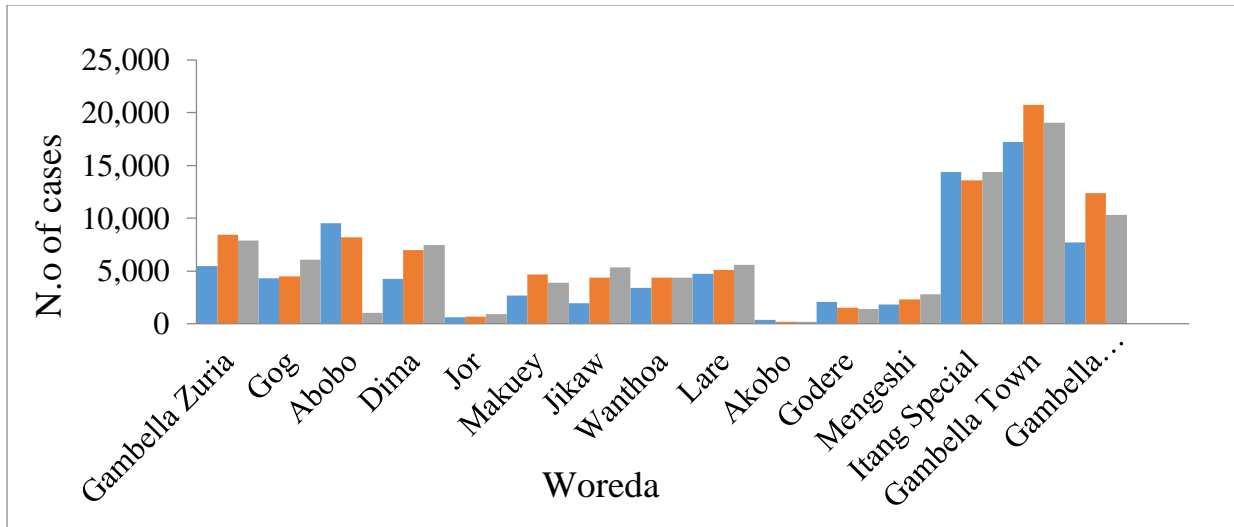


Figure: 8 outpatient visits due to malaria cases by zone/woreda, Gambella regions, Ethiopia, 2015-2017.

The reporting units predicted to have the highest number of malaria out-patient cases were at Gambella town, Itang special woreda and also few malaria outpatient cases reported at jor and Akobo.

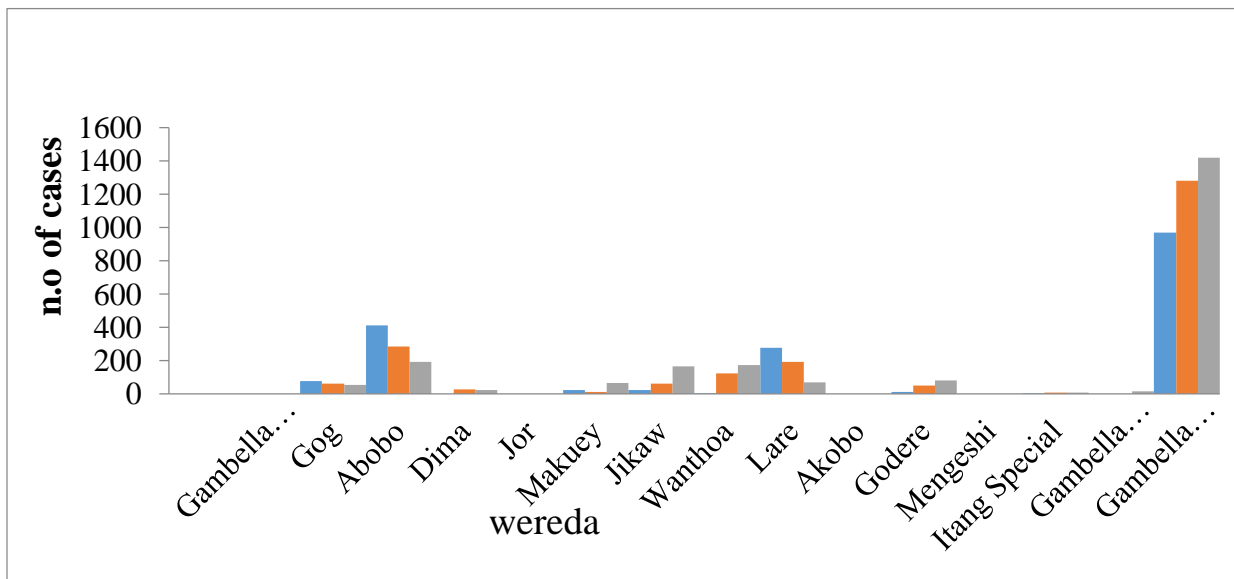


Figure: 9 inpatient admissions due to malaria cases by woreda, Gambella regions, Ethiopia, 2015-2017.

The highest number inpatient confirmed malaria cases were reported from Gambella hospital and also jor, Gambella zuria and Akobo were reported Zero inpatient admission during study calendar years

DISCUSSION

Malaria is a huge public health problem in terms of morbidity and burden on health care facilities, accounting for the increasing of outpatient/inpatient consultations in most health facilities in different regions in Ethiopia [6].

Average estimated annual incidence of reported confirmed malaria cases overall population was 204.56 per 1, 000 per year overall the three calendar years (2015 – 2017). Reported malaria inpatient admissions and deaths averaged 49.8 per 10, 000 and 3.83 per 100,000 per year respectively. Incident rate of confirmed malaria cases showed an increased from 208.1per 1000 person to 261.8 per 1000 person and malaria inpatient cases increased from 47.9 to 49.8 per 1000 person study calendar year. The present study revealed that the burden of malaria was high in the study area, this is may be due to climatological differences, altitude variation.

The present study suggest that the incidence of malaria cases were fluctuated but May to august malaria cases were increased 2015 and 2016. In contrast, with the month of September, October and November the season when the highest peak of malaria has been frequently reported from different parts of Ethiopia [7, and 8].

Temperatures increase, malaria transmission rates increase up to a threshold level of approximately 37 °C. The increased malaria transmission rates with higher temperatures result from elevated feeding rates of the female adult mosquitos [9]. In a similar fashion, over the study period in Gambella region malaria is still leading of health problem as a result of high temperature between 32-40 °C.

A recent study demonstrates that a higher prevalence of *P. falciparum* occurs in the lowlands, whereas *P. vivax* has a higher prevalence in the highlands [10]. This trend is true since the altitude of the region ranges from 300-2000 meters above sea level there were increasing relative numbers of *Plasmodium falciparum* among confirmed malaria case from 57,445 to 84,816 whereas *P.V* were 8,125 of 2015G.C 9,076 of 2016 and 6815 of 2017G.C.

The highest number confirmed malaria cases were reported from Gambella town and Itang special wereda, this is due to most of refugee camp near to this wereda the cases were referred from camp health post. Jor and Akobo woreda were reported few outpatients' malaria cases, this may be weak surveillance system or shortage of health facility.

LIMITATION OF THE STUDY

The data had been lost important variables, including age and sex. It was limited only to time and place variables so we could not be able to describe malaria cases by person

CONCLUSION

The last three years malaria incident were increased and it is still a major health problem in Gambella region. This is may be due to climatological differences, altitude variation. Therefore, to sustain effective control of malaria in this area will require and malaria control activities should be continue in a strengthened manner s.

RECOMMENDATION

- Federal Ministry of Health should revise weekly PHEM data collecting format to include age and sex
- Gambella regional health bureau should strength to control and prevention of malaria cases.

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Chapter four: Evaluation of surveillance system

5.1 Evaluation of Drancunculosis surveillance system in Gog woreda, Gambella Region

Abstract

Background: *Dracunculus medinensis* is the largest of all human parasitic nematode worms. Guinea worm eradication program in the 1980s significant progress has been made in reducing the number of cases from 3.5 million (in 1980s) to only 126 cases in 2014 and as few as 22 cases by the end of 2015. After 22 years of battle against Guinea Worm Disease, Ethiopia has remained one of the Guinea worm endemic countries. Guinea Worm Disease has been endemic in Gambella region. The aim this study was whether the surveillance system is meeting its objective or not.

Method: descriptive cross-sectional study was conducted by using national surveillance system evaluation check-list in Gog woreda from March 1-15, 2018.

Results: All assessed health facilities had clinical case registration log book and case based reporting format. Gog woreda have epidemic preparedness plan and all of the assessed health center have epidemic management committee and rapid response team. Supportive supervision was conducted monthly and Written feedback were available all visited health facilities. The case definition and reporting tools were acceptable by all respondent. Timeliness and completeness of the reporting was 100%. Generally, in Gog woreda, Drancunculosis surveillance system is simple, flexible and acceptable and well organized for early detection of epidemics.

INTRODUCTION

Guinea Worm Disease also called Dracunculiasis is caused by a 60-100cm long, filarial nematode worm known as *Dracunculus medinensis* [1]. *Dracunculus medinensis* is the largest of all human parasitic nematode worms and neither anti-helminthic medication nor a vaccine is available to treat or prevent Guinea Worm Disease [2, 3]. Guinea Worm Disease is characterized by a painful skin blister which may ultimately break forming an ulcer [4]. Though rarely fatal, it may cause permanent disability and may result in loss of family income and school absenteeism [5, 6]. Hence prevention is the only effective strategy to interrupt transmission of the disease. The disease mainly affects people in rural areas, deprived and isolated communities who depend on open surface water sources such as ponds for drinking. Guinea Worm Disease is transmitted when people in endemic area drink water containing copepods harboring infective larvae [6].

Since, the conception of the Guinea worm eradication program in the 1980s significant progress has been made in reducing the number of cases from 3.5 million (in 1980s) to only 126 cases in 2014 [7,8] and as few as 22 cases by the end of 2015 [9]. In 2016, 25 confirmed human GWD cases were reported globally from the 3 remaining endemic countries. Similarly, the number of villages reporting cases had been reduced from 23,735 (in 1993) from 21 endemic countries to 30 villages in 2014 and to only 20 by the end of 2015 [9] confined to only four countries, namely Chad, Ethiopia, Mali, and South Sudan [10].

After 22 years of battle against GWD, Ethiopia has remained one of the Guinea worm endemic countries. Historically, the first case of Guinea worm was reported in 1969 (11) far before the launch of the guinea worm program in Ethiopia. Guinea Worm Disease has been endemic in Gambella region and South Omo Zone of SNNP Region in the past but indigenous transmission in South Omo has been interrupted as of 2001, leaving Gambella region as the only indigenous transmission area [12]. In Gambella region only one district (Gog) is currently endemic for the disease where low intensity transmission is ongoing. All the remaining districts in Gambella except Godere and two districts in SNNP Region (Nyangatom and Surma) are classified as high risk areas in Ethiopia as most of them except Surma were formerly endemic plus there is population movement within these districts.

Therefore it is remarkable that since its commencement of active case search in 1993-1994 the Ethiopian Dracunculiasis Eradication Program (EDEP) has made significant progress towards elimination of GWD. The EDEP reported only 3 human cases and 14 animal infections (13 in dogs and 1 in baboon) in 2015 and only 3 cases in humans, 14 in dogs and 2 among baboon in 2016 (9).

RATIONALE OF THE STUDY

All the remaining districts in Gambella except Godere and two districts in SNNP Region (Nyangatom and Surma) are classified as high risk areas in Ethiopia as most of them except Surma were formerly endemic plus there is population movement within these districts.

In Gambella region only two district abobo and (Gog) is currently endemic for the disease where low intensity transmission is ongoing. In addition to this surveillance system had not been evaluated previously the districts level.

Therefore, this study was conducted to evaluate the functionality of the surveillance system and to identify the gap for the better improvement of the surveillance system.

OBJECTIVE

General Objective

- To evaluate Guinea worm surveillance system in Gog woreda, Gambella region, 2018

Specific Objective

- To assess the supportive activates
- To assess core function of drancuncunisis surveillance system
- To assess the drancuncunisis surveillance system the key attributes.

METHOD

Study area and period

The study was conducted in Gog woreda, which is found in Gambella region. The total population of the woreda is about 76,064 and the distance from the capital of the region is 133 km and 899 km away from Addis Ababa. The study was conducted from March 1-15, 2018.



Map: 4 map of Gambella showing Gog woreda

Study design

A descriptive cross-sectional study was conducted.

Study Subjects

The study units were woreda health offices and health facilities. A total of (10) sites were included in the study, these include woreda health office, governmental health center (2) and health posts (7).

Sample Size and Sampling

Purposive sampling was used to select one zone on the basis of its burden of Guinea worm cases compared with other woreda of Gambella Region. Then, in the selected woredas, two health centers and seven health posts were selected purposely.

Data collection technique

The data was collected using checklist of CDC guideline for surveillance system evaluation. The principal investigator conducted a brief meeting with responsible persons before assessing the objective of the study and its significance, and highlighted information after assessment, at all level.

Data analysis

The data was entered in computer using Microsoft office excel and analyzed using Microsoft Office Excel.

Case definitions

According to the PHEM guideline, Guinea worm case definitions are; standard case definitions and community case definitions, Guinea worm suspect.

Standard case definitions: an individual exhibiting skin lesion with emergence of one or more Guinea worm (each individual should be counted only once calendar years)

Community case definitions: a person who has painful, burning sensation, blister or rapture blister emergence of one or more guinea worm.

Guinea worm suspect: a person exhibiting sign and symptom compatible with Guinea worm disease; unexplained localized itching, painful blister or skin lesion but no visible guinea worm

Operational definitions

Simplicity: The simplicity of a public health surveillance system refers to both its structure and ease of operation as a surveillance system.

Acceptability: Reflects the willingness of individuals and institutions to participate in the surveillance system. **Data quality:** Is the completeness and validity of the data recorded in the public health surveillance system.

Representativeness: Is the ability of the system to describe health events accurately in terms of time, place and person.

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: 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: Refers to the relevance of the system in terms of feeding information for action.

Positive predictive value: Is the proportion of reported cases that actually have the health related event under surveillance.

Flexibility: Is the ability of the system to adapt to changing needs such as the addition of a new disease, the collection of additional data, and change in case definition.

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

DISSEMINATION OF RESULT

Drancunculosis surveillance system evaluation was disseminated to Gambella Woreda health office, Gambella Region health Bureau PHEM department, and AAU institute of public health, department of field epidemiology

ETHICAL CLEARANCE

Official letter was obtained from Gambella regional health bureau PHEM department then letter was written to respective woreda before data collection.

RESULTS

Purpose/ objective of the surveillance system

Objective of PHEM surveillance system

National public health emergency management (PHEM) allows monitoring of 22 selected diseases such as: Guinea worm disease, AFP/polio, measles, Avian human influenza, cholera, neonatal tetanus, RVF, sever acute respiratory syndrome, small pox, yellow fever, anthrax, viral hemorrhagic fever, maternal death and rabies are to be reported immediately. Meningitis, malaria, typhoid fever, epidemic typhus, relapsing fever, dysentery and severe malnutrition are to be reported weekly.

The objective of guinea worm surveillance as described in the guideline

- To rapidly detect and contain cases in order to prevent further transmission of the disease to others through contamination of drinking waters source.
- Preventing infected people from contaminating drinking waters.

Descriptions of previous guinea worm outbreak

There were 60 human drancunculosis cases reported in 1994 and 0 case in 2017. Since the number of cases declined significantly and low level of transmission was maintained from 2012 till end of 2017.

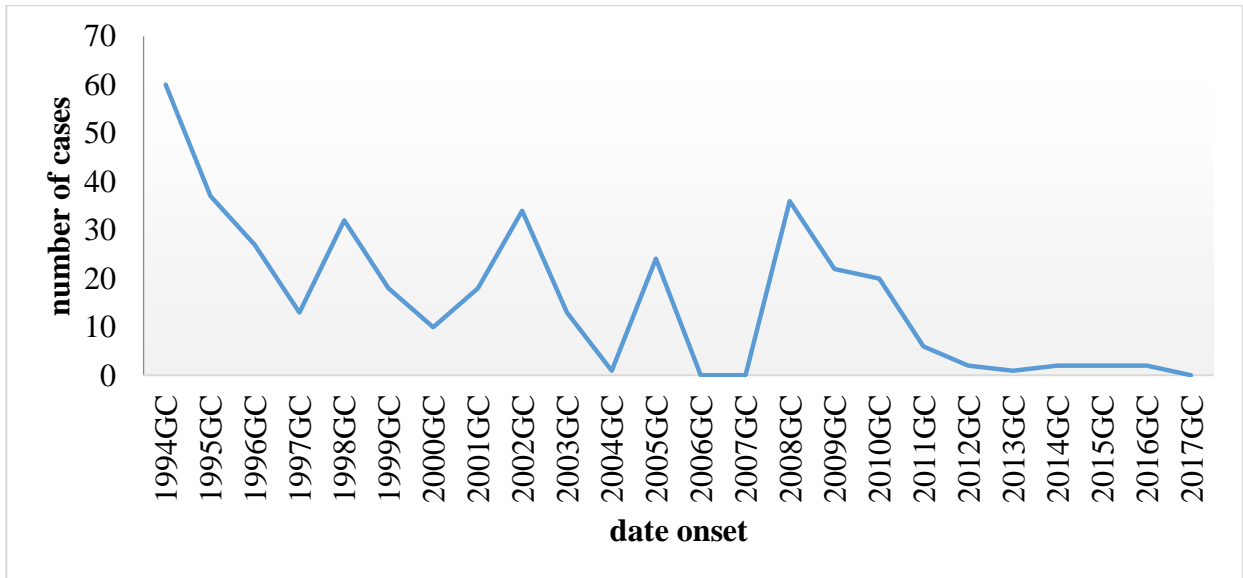


Figure: 10 human GWD case trend by year, 1994 to 2017 in Gog woreda,

GWD infection among Dog population was 13 cases in 2015 and baboon population also 4 cases were reported in 2017

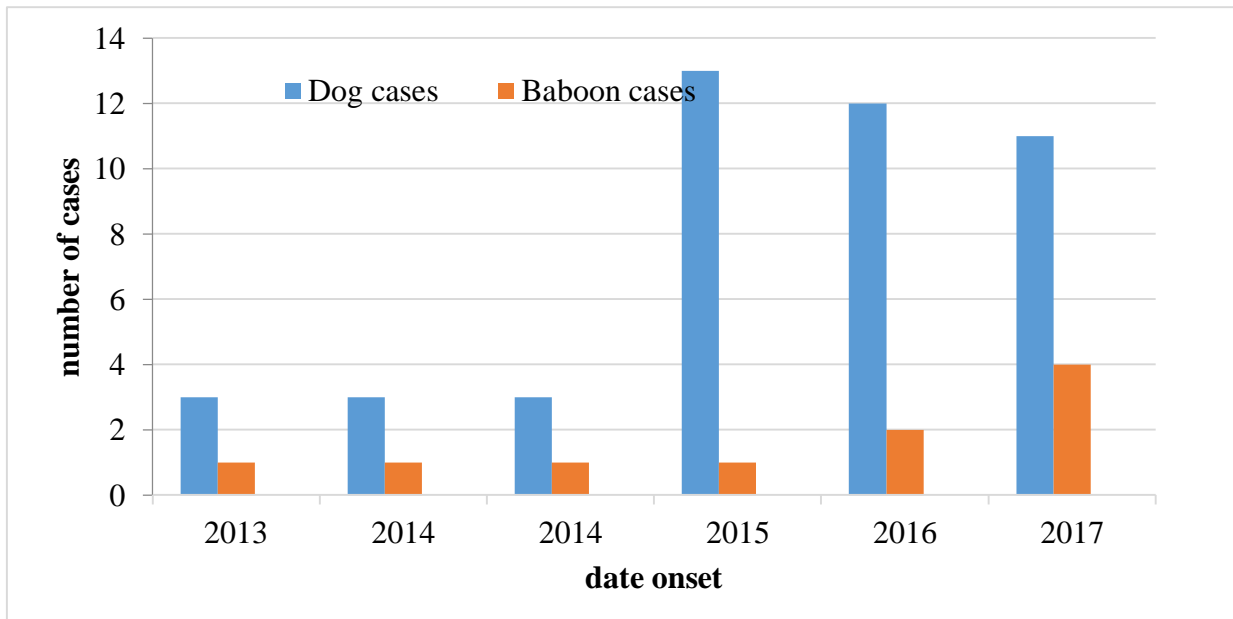


Figure: 11 Dog and Baboon GWD Infections in Gog Woreda by years (2013-2017)

Level of surveillance system for guinea worm

Currently Gog woreda is GWD surveillance system level I and multiples active cases searches are conducted every day.

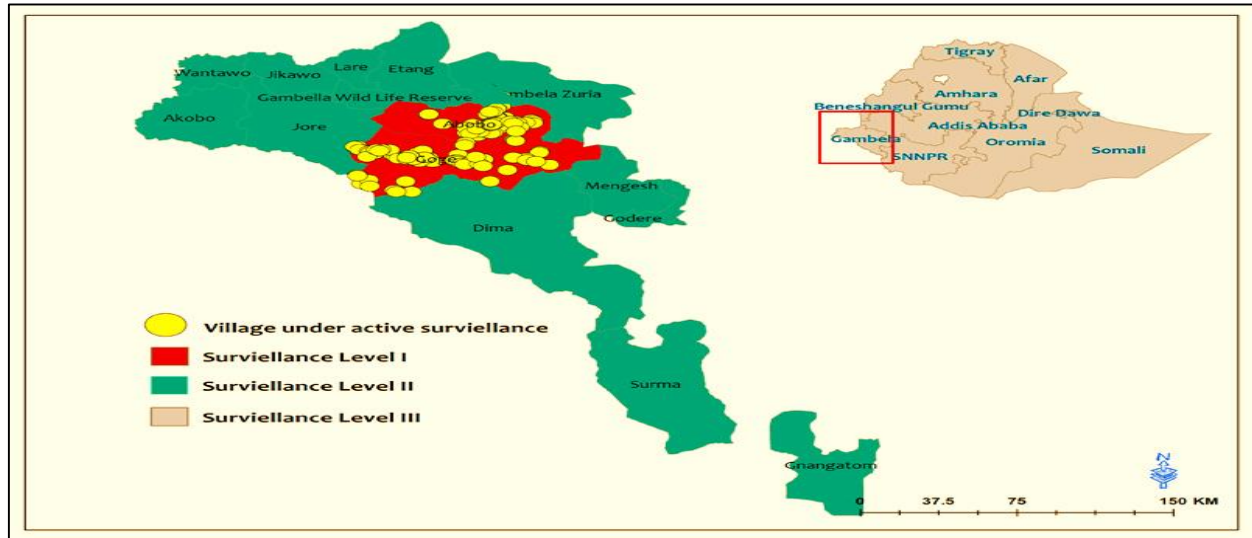


Figure: 12 levels of GWD surveillance in Ethiopia, 2018

Core function of surveillance system

Population under surveillance

The national public health emergency management targets all the population in the country to be under surveillance for all the twenty one priority diseases. All woredas in Gambella Region cascade the same structure. The surveillance system encourages community participation to detect and respond to disease epidemics through the health extension program to detect epidemic early.

Case detection

In Gog woreda multiples searches for cases are conducted each week, usually house to house by village volunteers and other GWEP carter center staff in all inhabited places. Information about

the cash reward is disseminated to all residents constantly and Levels of awareness are monitored monthly.

Registration

All assessed health facilities had clinical case registration log book and case based reporting format. We found 340 animal and human suspected cases registered in rumor registration log book the last 12 month.

Data reporting

At any time, if the nurse / community health worker suspect Guinea worm case, he/she should immediately notify for focal person to confirm the cases, this is usually done. The reporting rate within the past 12 months for Health center was 100% and for health post 100%. Reports were sent to the next level through delegated person, telephone, mail and mobile texting

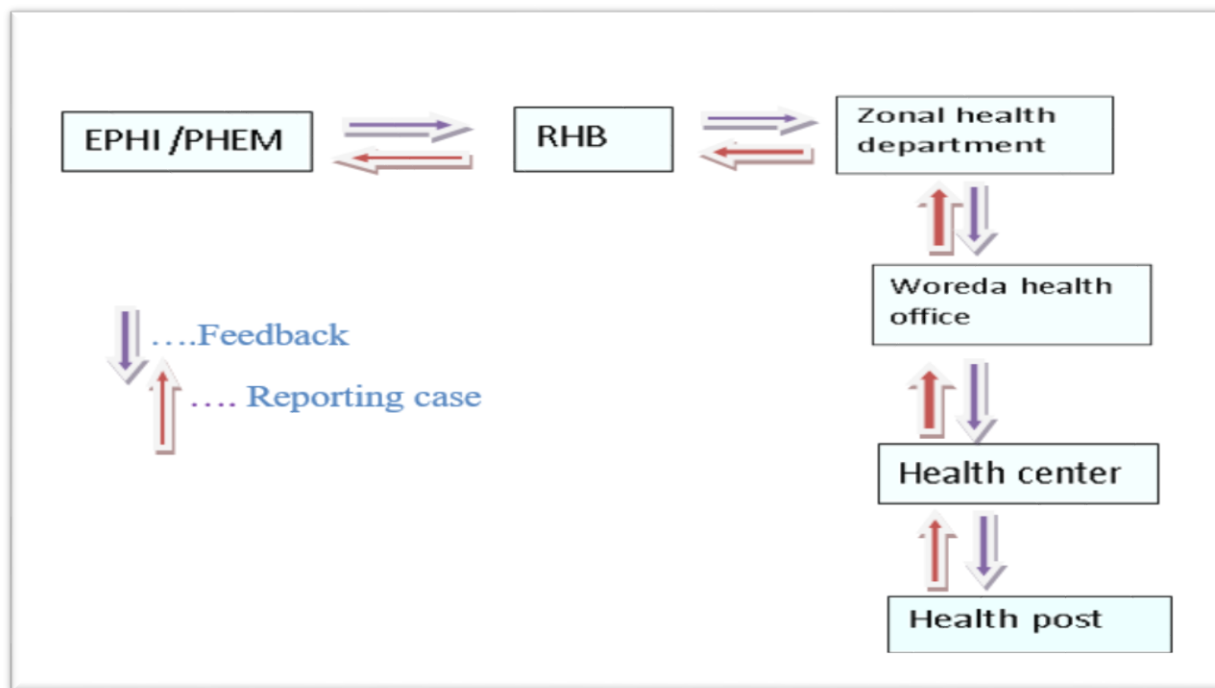


Figure: 13 channel of reporting and feedback in Gog woreda, Gambella region 2018

Data analysis

The data entry is done at central level. However, the weekly report data received from woreda health office by phone entered in to standard format and sent to RHB mostly through phone as well as paper form. RHB analyze and interpret data by person, place and time in order to use for the future planning and monitoring.

Epidemic preparedness and response

Gog woreda have epidemic preparedness plan and all of the assessed health center have epidemic management committee and rapid response team. There is no specific budget for Guinea worm surveillance; however, in case of experiencing any emergency, regional health bureau collaboration with Carter center mobilized the budget and some material needed for response activity. There is available Guinea worm cases definition and PHEM guideline in all assessed health post and health centers.

Epidemic prevention and control activity is implemented based on the available local data by making analysis or by using clinical registration log book at health post level

All assessed health offices and facilities received training on disease surveillance given by Gambella Regional Health Bureau and carter center.

Feedback and supervision

All assessed health facility, Supportive supervision was conducted monthly and Written feedback were available all visited health facilities.

Resource used to operate the surveillance system

Common material used for GWD surveillance including; abate all water sources, Baboon tripping, telescope, gloves, recording books, motorcycle, reporting forms, and computers. The system also has adequate reporting formats and solar power supply available in all woreda health offices

Some of the health centers lack of mobile phone or radio to enable to report immediately, inaccessibility of road for transportation, there is no enough Motorcycle

Description of attributes of the surveillance system

Usefulness

In the visited health facility respondents has a common understanding of early detection of epidemics of diseases under surveillance as the major use of the surveillance system. The respondents believe that the GWD surveillance system help to detect the outbreak on time, estimate magnitude of the morbidity

Simplicity

All respondents in the assessed health facility agreed the case definition of GWD is simple and easy to understand. The format took less than 10-15 minutes.

Flexibility

The visited woreda health office respondents agree the reporting format flexible to report other new events under immediately reportable case based conditions.

Acceptability

The case definition and reporting tools were acceptable by all respondent. The method used for reporting case is considered clear and more interested to report. The reporting of health posts is 100%, health centers 100% the past 12 months.

Representativeness

The representativeness of the surveillance system was assessed by health service coverage. In Gog woreda has one hospital, 2 HC and 14 HP are available so the health service coverage is 97%. The community has good health seeking behavior for this disease.

Timeliness

Timeliness of the reporting was 100%

Completeness

The completeness was 100%.

Sensitivity

Sensitivity nearly 100% because Case definition too sensitivity as each case is classified as Guinea worm.

Positive predictive value

Nearly Positive predictive value to be 100%, since case definition has been met, there is no need for laboratory confirmation.

Stability

The surveillance system is able to collect, manage and provide data properly without failure. However data from health post and health center are collected by phone communication or in hard copy and will be sent to woreda health office by delegating one health professional. However, when they communicate information by telephone they will not be charged by the system when they do the work by their own cost.

Good opportunities

- Availability of carter center conducting active searching animal and human cases

Strength of the study

- This GWD surveillance system evaluation is conducted in Gog woreda, Gambella region for the first time and will provide base line information for further studies.

CONCLUSIONS

In Gog woreda Drancunculosis disease is endemic. The district under active surveillance which is level 1 so that multiples searches for cases are conducted, usually house to house by village

volunteers and other GWEP staff in all inhabited places. Cash reward disseminated to creating awareness for responding in a timely manner to every rumor containing emerging worm.

At any time, if the nurse / community health worker suspect Guinea worm case, he/she should immediately notify focal person to confirm the cases, this is usually done. All visited health facility respondents has a common understanding of early detection of epidemics of diseases under surveillance as the major use of the surveillance system.

There is available Guinea worm cases definition and PHEM guideline in all assessed health post, health office and health centers. Supportive supervision was conducted monthly and Written feedback were available all visited health facilities.

Generally, in Gog woreda, Drancunculosis surveillance system is simple, flexible and acceptable and well organized for early detection of epidemics. The main aim of the surveillance system is to detect outbreaks before causing any damage to the public, according to set PHEM objective the surveillance system is Gog woreda surveillance system was the goal met its objective. Gambella regional health bureau and Gog woreda should continue such strong disease of surveillance system.

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Chapter 5- Health profile description

4.1 Itang special Woreda health profile-Gambella region, 2018

Summary

Introduction: Health profile assessment is influenced by a range of factors from the physical and social environment, individual life style. In developing country the planning and management of health services often proceeds within an environment of inadequate information about the health status of the population served and the occurrence of important determination of health. In Ethiopia communicable disease and nutritional deficiency is the main health problem of the country. Therefore the aim of health profile describes the health and health related information of Itang special woreda.

Methods: We used descriptive cross-sectional study and secondary data was conducted. Both qualitative and quantitative data were by using health profile data collection checklists.

Result: 25(60%) schools have latrine, of this 17 schools (40%) have no functional latrine and no one school have access to safe water supply. In the district total safe water coverage 15% pipe water. The PCV1, PCV3, measles, Penta dropout Rate and Measles dropout Rate vaccination coverage from annual eligible infants in the district were 88%, 87% and 81%, 1.3%, 0.08% respectively. Malaria is remaining the leading cause of morbidity for the last two years (2016 to 2017).

Conclusion: Itang special Woreda has safe water coverage 15% (pipe water) and 40% have no functional latrine and no one school have access to safe water supply. This may potentially lead to the outbreak of WASH related diseases.

INTRODUCTION

Health profile assessment defined as influenced by a range of factors from the physical and social environment, individual life style and behaviors, and biological factors such as genetics, sex, and age. A wider influence on an individual's health is constituted by the living and working conditions, including access to essential services and facilities. In developing country the planning and management of health services often proceeds within an environment of inadequate information about the health status of the population served and the occurrence of important determination of health [1, 3].

In Ethiopia communicable disease and nutritional deficiency is the main health problem of the country. Shortage and high turnover of human resource and inadequacy of essential drugs and supplies have also contributed to the burden. Despite major strides to improve the health of the population in the last one and half decades, Ethiopia's population still face a high rate of morbidity and mortality and the health status remains poor [2].

The Woreda Health Profile includes an environmental health report, demographic and economic data, health status data & community resources. This profile describes the current health status of the woreda. With this information, the community can complete an assessment and begin to address specific issues and set goals for health improvement. The profile would provide to assist county councils and other organizations as well as citizens and policy makers to assess the health of their county population. The information will present as simply as possible so that people who are not health professionals can see a difference between their community and the state as a whole and begin the process of planning for better health[4].

RATIONALE OF THE STUDY

Itang special Woreda there was no organized and well documented community health profile at one place. Different health and health related data were available at different place of the woreda in disorganized situation in such a way that no one can access and use these data at the right time and place. Therefore, the main purpose of the health profile assessment is to establish how projects or policies have impact, both positively and negatively on the health of a given population.

OBJECTIVES

General Objective

- To describing key aspects of the health profile of Itang special woreda

Specific Objective

- To describe existing community health problem
- To come with recommendation based on finding

METHODS AND MATERIALS

Study area and period

Itang special Woreda is one the 13 Woredas found in Agniwa Zone. it is located 45 km west of Gambella bordered on the North with oromia region, on the south with abobo Woreda , on the East with Gambella zuria , on the West with Lara. The surface area is mostly flat; the altitude of this Woreda ranges from 350 to 480 meters above sea level; rivers include the Baro and annual rain fall ranges from 900-1200mm per cube, Annual temperature range 24-41 0c .the climatic Zones is 100% kola. The area of the woreda is 1937sqkm. Study was conducted from 1-15 February, 2018.



Map: 5 map Gambella region showing Itang special woreda

Study design

We used descriptive cross-sectional study and secondary data was conducted.

Source of population

The source population for this study is the population of Itang special woreda

Data collection instrument and procedure

Data was obtained from health, agriculture, culture and tourism, water resource management, finance and economy and education offices. Both qualitative and quantitative data were collected through interview and document review using health profile data collection checklists.

Data analysis

Data was entered in a computer and clean and analyzed appropriately using micro-excel sheet. Finally the result was presented with texts, tables.

DISSEMINATION OF RESULT

Finally, finding of health profile description was disseminated to Itang special Woreda health office, Gambella Region health Bureau PHEM department, and AAU department of public health and field epidemiology.

ETHICAL CLEARANCE

Health profile assessment was collected after obtaining official letter from Gambella regional health bureau and Public health emergency management (PHEM)department as well as permission was obtain from concerned bodies in the woreda during data collection.

RESULTS

Demography

Itang special woreda have a total of 50,156 populations of this 24,576 (48.99%) are males and 25,580(51.00%) are females. The woreda has 23 kebeles, of this 22 are rural and one urban kebeles. The area of the woreda is 1937sqkm and surface area is mostly flat; the altitude of this Woreda ranges from 350 to 480 meters above sea level; rivers include Baro and Annual

temperature range 24-41 Oc. the climatic Zones is 100% kola. Of the total 50,156 population 95% (47,648) of them live in rural kebeles and 5% (2,508) live in urban kebeles.

They led their life by practicing mixed farming, and agriculture took of the income source. the most common stable foods/crops in the woreda that are cultivated during the cropping season using rain wet land or rain feed farming are , maize, potato, banana, Rice .The income generated from fisher is varies from 4,000-8,000 per month.

Table: 5 Population distributions by kebeles with estimated population and households in district 2017

S. No	Kebeles	Both sex	Male	Female
1	Achua	8765	4292	4470
2	Pulkod	4382	2147	2235
3	War	2519	1234	1285
4	Watgach	2602	1275	1327
5	Drong	3163	1550	1627
6	Baziel	2940	1441	1613
7	Biljakok	2381	1167	1499
8	Pilual	3210	1573	1214
9	I/kir	3589	1759	1637
10	Okura	1485	728	1830
11	Awagn	792	388	757
12	Ajiew	912	447	404
13	Adima	504	247	465
14	Alaha	677	332	257
15	B/selam	367	180	345
16	Pukumu	1814	889	187
17	Adong	2228	1092	925
18	Elia	1321	647	1136
19	Ebago	832	408	674
20	Pil/wanke	943	462	481

21	Mera	943	462	481
22	Pulgeng	1587	775	807
23	Lire	2205	1080	1125
Total		50,161	24,575	26,781

Females in the reproductive age group (15-49 years) are estimated to be about 6,676, Male population 24576 (49%), Female population 25580 (51%), Households 10,904 and the total number of pregnancy women estimated to be 1505.

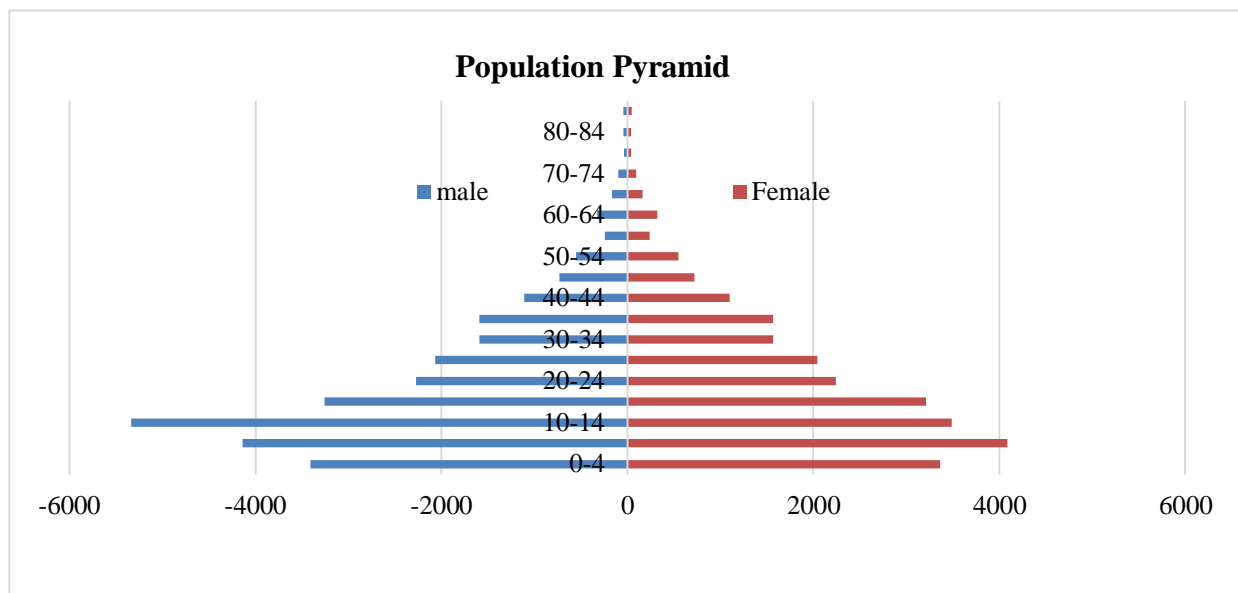


Figure: 14 Itang special woreda population pyramid

The main ethnicities of this Zone are the Nuer (63.96%), Anuak (25.17%), and foreigners from Sudan (4.62%), Komo (2.66%), and all other ethnic groups 3.59%. Languages spoken in this Zone include Nuer (68.72%), Anuak (25.75%), and Opuuo (2.66%) etc.

Infrastructure of the woreda

Education

A total of 42 schools (3 kindergartens, 36 primary, 2 secondary and 1 preparatory) are available in the woreda and 15,941 students are learning in these schools among those 53% (8517) are

males and 47% (7424) are females. From the total 15,941 enrolled student 9% (1505) are dropped out due to economic and health problems. Among 42 schools, about 17 schools (40%) have no functional latrine and no one school have access to safe water supply.

Drinking water supply

In the district total safe water coverage 15% (pipe water) which is only limited to kebeles, some kebeles uses Baro river pond water for drinking and other purposes.

Electric power supply and telephone communication

A total of 1905 (17 %) household have access to electric power supply and all kebeles have access to wireless telephone services.

Transportation

About 14 kebeles in Itang special woreda are accessible for transportation in all seasons but 9 kebeles are not accessible for transportation during raining seasons.

Disaster situation/ outbreak

There were no any disaster registered in the woreda for the last one year

Health

Health budget allocation

Based on the documentation from the district Woreda Health Office, the annual budget allocated for 2009 EFY Of the total budget 99,165,742 EBR was fund received from governmental then the health sector share 12,566,534 ETB.

Family planning

Family planning users by the type of contraceptives they used is that majority of the FP users 396(72.92%) were injectable followed by oral contraceptives 79(14.54%) & Implant 66(12.15%) and IUCD 2(0.36).

Immunization

Immunization is one of the medical technologies used to protect the life of infants and children's against diseases In Itang special woreda 2009E.C

s/no	Antigen	Plan	Achievement	Percentage	
1	BCG	1505	1240	82%	
2	OPV1	1390	1223	88%	
3	Opv3	1390	1207	87%	
4	Penta1	1390	1223	88%	
5	Penta3	1390	1207	87%	
6	Measles	1390	1120	81%	Penta Drop Out Rate = 1.3%
7	PCV1	1390	1223	88%	
8	PCV3	1390	1207	87%	
9	Rota 1	1390	1217	87%	Measles Drop Out Rate = 0.08%
10	Rota2	1390	1063	76%	
11	Fully immunized	1390	1026	74%	

Table: 6 Itang special woreda immunization coverage in 2009 E.C.

Health services

Itang special woreda have total of 15 health institutions among those; 0 hospital, 3 health centers, 9 health post and 3 private clinics. The health service coverage of the woreda is 100%.

A total of 221 health worker found in the woreda, among those majority are Health extension workers and nurses.

Table: 7 population to Health Professional Ratio at Itang special woreda, Gambella Region, Ethiopia 2010E.C.

S. No	Category	Health professional	WHO standard	Professional /

				population
1	Health officer	12	1:10,000	1:4345
2	Nurses (Deg. and Dip.)	101	1:5,000	1:516
3	Mid wife (Deg. and Dip.)	5	1:5,000	1:10,432
4	HEWs	103	1:2,500	1:507
5	Total health worker	221		

Causes of Morbidity

In Itang special woreda malaria, acute febrile illness and diarrhea are the top leading cause of adult morbidity and similarly malaria, diarrhea and Pneumonia are top leading causes of morbidity in under five children's.

Table: 8 top 10 diseases of morbidity in adult and under five in the district 2009 E.C

Rank	adult Morbidity case	Number	%	Under five morbidity cases	Number	%
1	Malaria	5549	44.52%	Malaria	8472	49.54%
2	AFI	3341	26.80%	Diarrhea	2850	16.66%
3	Diarrhea	1117	8.96%	Pneumonia	1711	10.00%
4	AURTI	675	5.41%	AFI	1395	8.15%
5	Pneumonia	470	3.77%	AURTI	1253	7.32%
6	STI	295	2.36%	Skin infection	546	3.19%

7	Dyspepsia	275	2.23%	Helmethiasis	434	2.53%
8	Skin infection	265	2.12%	Conjunctivitis	185	1.08%
9	Trauma	247	1.98%	Malnutrition	179	1.04%
10	Trachoma	229	1.83%	Trauma	73	0.42%

Environmental health and sanitation

In the wored there are 10,903 household among those 740(7%) of the households have with latrine access.

All the Kebeles has declared defecating everywhere in the field except one urban kebele were accessed with latrines. The woreda health office with in collaboration with different stakeholder has given an intensive solid and liquid waste management education.

Endemic diseases

Malaria

In the woreda there are 23 kebeles are malarious and 50,156 populations are at risk. All Kebeles are treated with Indoor Residual Spray (IRS) and the ITN coverage is 100% in 2016/2017 calendar years. Itang special woreda Malaria is endemic, the present of malaria breeding site and Interrupted or potentially interrupting rivers

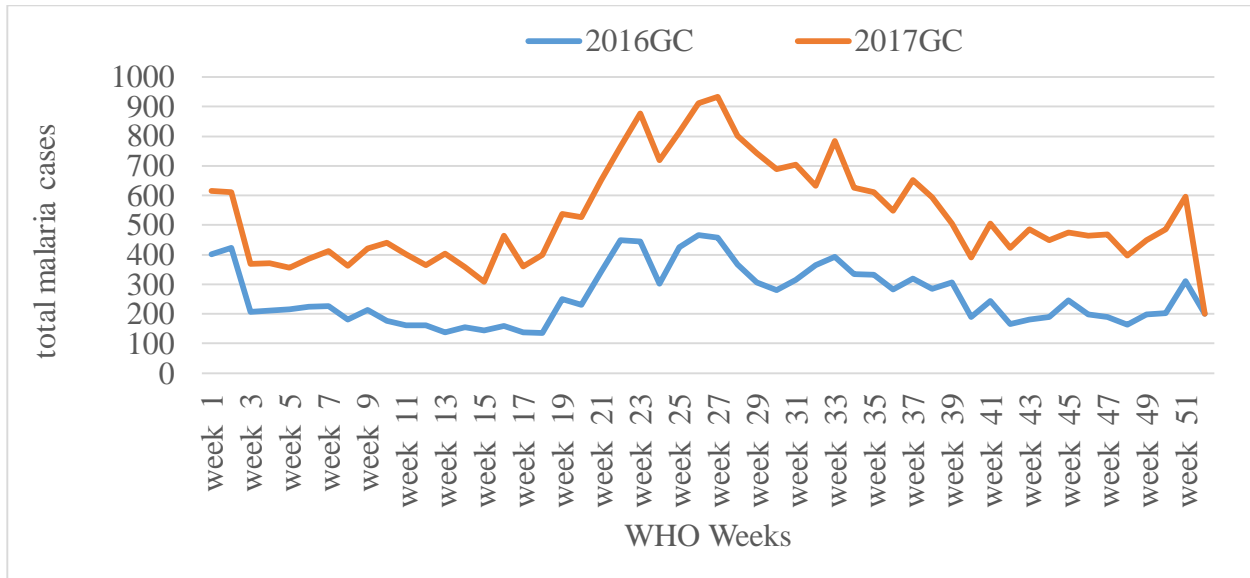


Figure: 15 Malaria cases of Itang special woreda by WHO weeks 2016/2017

TB/leprosy

In Itang special wereda there were a total of 33 all forms of TB cases were detected. 13(39.39 %) cases were confirmed PTB, 14(42.42%) were p/Negative and 5 (15.15 %) EPTB. There were 1 leprosy cases on treatment in the in 2017.

HIV/AIDS

A total of 6,402 people screened for HIV/AIDS among those 25(0.39) were positive in 2017. In the woreda 246 people live with HIV/AIDS. 212 are enrolled (ART) and 34 are on pre ART stage. The HIV/AIDS prevalence were 0.54%.

Nutrition

In the woreda a total of 9 outreach therapeutic program. Among those, a total of 218 SAM cases were registered. The district have basic CMAM supplies (RUTF, therapeutic Milk and routine medication) and the trained man power.

Essential drugs

Itang special woreda have essential drugs used for most frequently occurring diseases like Amoxicillin, ORS, Arsusunet injection, Coartam, Mebendazole is on hand and no drug shortage during 2017 and 2018.

DISCUSSION

Epidemiological and health service research in Ethiopia has shown that illiteracy is usually associated with high health risks and low health seeking behavior. In addition to a wide range of diseases and child mortality associated with illiteracy or under-education, HIV/AIDS infection is also disproportionately high in out of school youth. Despite major progress in education, national literacy levels are still low [2]. Since the government of Ethiopia is restlessly worked to address both coverage and quality of education the entire country corner. With this regard the Itang special woreda has total 15,941 enrolled student 9% (1505) are dropped out due to economic and health problems. This woreda education office had good school coverage as per its population; 1 preparatory, 9 high school & 32 elementary school for 50156 population.

In Ethiopia about 75% of causes of OPD visits are largely due to the lack basic sanitation provisions [2]. Similarly, Itang special woreda sanitation and hygiene coverage of 7% as the result of this Itang special woreda top 10 causes of morbidity both in adults and children, majority of the disease were communicable diseases which can be prevented through improving hygiene and sanitation.

All the Kebeles has open declared defecating everywhere in the field except one urban kebele were accessed with latrines and also Among 42 schools, 25(60%) schools have latrine, of this 17 schools (40%) have no functional latrine and no one school have access to safe water supply.

In the district total safe water coverage 15% pipe water but The District Water Resource Office has been working to supply safe drinking water for the community in collaboration with different stakeholders and partners. The urban water supply system/motorized/ is under construction with 13 new water points being constructed so far. After the completion of the project the town water problem is expected to be resolved.

The PCV1, PCV3, measles, Penta dropout Rate and Measles dropout Rate vaccination coverage from annual eligible infants in the district were 88%, 87% and 81%, 1.3%, 0.08% respectively. This vaccination coverage achieved which is above standard recommended by WHO as well as national immunization guideline

Malaria is remaining the leading cause of morbidity for the last two years (2016 to 2017). Even if the coverage (IRS) and the ITN distribution were 100%, but the number of malaria cases become increased 2017 compared to 2016.

CONCLUSION

Itang special woreda communicable disease like malaria, Pneumonia, Acute febrile illness and diarrhea are the most frequently occurring disease both in adult and pediatric population. It has safe water coverage 15% (pipe water) and 40% have no functional latrine and no one school have access to safe water supply. This may potentially lead to the outbreak of WASH related diseases.

Therefore the woreda have to promote hygiene and sanitation for the community and also work with other sectors which work in hygiene and sanitation to improve availability of water and toilet facility at schools.

REFERENCE

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4. Mini-Ethiopia Demographic and Health Survey 2014

Chapter 6- Narrative summary of disaster situation visited

6.1 Maher assessment conducted in Gamella region, 2018

SUMMARY

The government of Ethiopia has been conducting multi agency emergency health and nutrition assessment in the past years to address the emergency health and nutrition need of the country and conducted twice in a year following post harvesting season Belg and Maher.

Maher assessment conducted in nuer zones and woredas on emergency health and nutrition in Gamella region from November 21, 2018 to December 11, 2018. The main objective of this assessment is to identify areas where emergency health and nutrition assistance needed. The assessment was conducted in 1 Zones and 1 Special woreda.

Multi-sectorial PHEM coordination forum at all Zonal and Woreda level available and different governmental and nongovernmental organizations are involved in the forum. The forum meets on monthly and quarterly.

From May to October 2018, no outbreak reported from visited all woredas and Zones. Epidemic preparedness and response plan is available in all visited zones and woredas. However, the plan is not supported by budget.

The refugee influx from south Sudan makes the Zones/Woredas prone to various outbreak causing diseases such as Acute Watery Diarrhea, malaria, meningitis, Measles, Guinea Worm disease, SAM and others As well as, in Itang special wereda 52,163 population, Mekuety wereda 23,563 population, Wanthoa woreda 31,976 population, Lare wereda 47,633 population identified at risk population to be affected by the disease.

INTRODUCTION

Gamella region is located 766 KM south west of AA, 422,000 total population and hosting more than 300,000 Refugees from south Sudan. It is bordering to SNNP Regional State to South East direction, to the North and North East direction is Oromiya region and to the West, North West and South West direction to the Republic of South Sudan.

The Region has a total area of approximately 30,314 square km with altitude ranging from 300 to 2,000 meters above sea level. It has the total of 3 zones and 14 woredas with 1 special woredas, 1 Regional Hospitals, 3 primary hospital, 1 Regional lab, 29 Health Centers, & 117 health posts. The potential health service coverage of the region reaches. The majority of the population live in rural areas. The population is comprised of five ethno-linguistic groups: the Nuer, Anyua, Majang, Opo and Komo. Animal husbandry is the major economic activity of the people in the Region and subsistence farming, fishing, hunting and gathering of wild plant are practiced by communities living in rural areas.

The government of Ethiopia has been conducting multi agency emergency health and nutrition assessment in the past years to address the emergency health and nutrition need of the country and conducted twice in a year following post harvesting season Belg and Maher. The assessment is led by the Federal Disaster Response Management and Food Security Coordination office in collaboration with WHO, UNICEF, WFP, IRC, IOM and ZOA and Government Bureaus (Regional Health Bureau, Regional Education Bureau, Bureau of Labour and Social Affairs, Bureau of Women and Children's Affairs, NMA, Regional Water Bureau)[1].

The Gambella region is vulnerable to manmade and natural calamitous which negatively impact the living condition of the people who live within that locality. Ethnic conflict, flooding and over flow of the main rivers are the major factors causing disasters. As a result many people are displaced from place to place in order to safeguard their life.

Maher assessment conducted Nuer zones on emergency health and nutrition in Gamella region from November 21, 2018 to December 11, 2018. The main objective of this assessment is to identify areas where emergency health and nutrition assistance needed for the upcoming six months and to determent the gap in the capacity of the health system in addressing anticipated risks so as to develop response plan.

OBJECTIVES OF THE ASSESSMENT

- To assess the type, magnitude, severity and likelihood of different hazards (drought, human epidemics, conflict, floods, etc.) and likelihood of different risks in the most “vulnerable” Woredas during “Maher” time in Nuer zone and Itang special wereda.
- To assess the existing capacity of the basic social services to address the emergencies likely to occur at Nuer zone and Itang special wereda.
- To identify areas where emergency assistance might be needed and come up with reasonable estimates of the size of the population needing emergency assistance and the duration of assistance at Nuer zone and Itang special wereda.

METHODOLOGY

Study Area and period

The assessment was conducted in (Lare, Mekuey, Wanthoa (Nuer zone)) and Itang special Woreda in Gambella region from November 21 to December 11, 2018. The Zones and woredas were selected based team allocation by Federal Disaster Response Management and Food Security Coordination office in Gambella region.

Assessment Team

Twelve experts from Federal Disaster Response Management and Food Security Coordination office in collaboration with WHO, UNICEF, WFP, IRC and ZOA and Government Bureaus (Regional Health Bureau, Regional Education Bureau, Bureau of Labour and Social Affairs, Bureau of Women and Children's Affairs, NMA, Regional Water Bureau were participated in the assessment. Half day orientation was given for all assessment team before deployed to regions

Assessment Tools

Data was collected on key emergency related indicators on human health, nutrition using standard questionnaires prepared at National level. The questioners addresses socio-demographic profile, health profile, status of epidemic prevention and control multi sectorial coordination committee at all levels and go through asking ongoing epidemic situation and checked availability of emergency drug at zonal and district levels.

Source of Data

Data were collected through discussion and interview from Zonal Health department and woreda health offices, PHEM officers and Disease Prevention officers were interviewed in the data collection and Review of secondary data was also used to see trends in disease patterns, nutrition cases.

FINDINGS

Zonal Level findings

Coordination

In the Nuer zones multi-sectorial coordination forum are available. In the forum all relevant government, nongovernmental organizations are represented like; the woreda PHEM task force, UNICEF and WHO. The forum meets on monthly and quarterly.

Major Epidemic prone diseases and conditions

In all assessed Zone and woreda major prone diseases such as

- Flooding
- Guinea worm
- Measles
- Malaria and meningitis
- SAM

Outbreak

- There were no outbreak reported in Nuer zone from May to October 2018

Public Health Emergency Management

Public health emergency preparedness and response plan is available. The plan is not supported by budgeted but if an outbreak occurred resources will be mobilized from governmental and nongovernmental organizations. There is a trained staff on Public Health Emergency all zones/woreda

Requirements /Needs/

Due to the presence of malaria breeding site, unprotected irrigation, Malaria is identified as risk factor for epidemic to occur. The refugee influx from south Sudan makes the Woredas prone to various outbreak causing diseases such as Acute Watery Diarrhea, meningitis, Measles, Guinea Worm disease, SAM and others. The above listed disease is the anticipated risk for the upcoming six month (Table 1).

zone	Woreda at Risk	Type of risk
	Itang special	Malaria, meningitis, measles, Guniea worm, SAM, EVD

	wereda	
Nuer zone	Mekuey wereda	Malaria, meningitis, measles, Guniea worm, SAM, EVD
	Wanthoa woreda	Malaria, meningitis, measles, Guniea worm ,SAM, EVD
	Lare wereda	Malaria, meningitis, measles, Guniea worm, SAM, EVD

Table: 9 Type of risk and population to be affected identified at Zone level, November –April, 2018/19

Woreda level findings

Coordination

In visited woreda lacks Public health emergency but have rapid response team consisting of various disciplines to detect and respond to outbreaks early. There is preparedness and response plan in all assessed zone. However, the plan is not supported by budget but, if there is outbreak any emergency resources will be mobilized

Top five causes of morbidity

Malaria is one of the top leading causes of morbidity in both below five years of age and above five years of age

Table: 10 top five causes of morbidity by age, 2018

Zone	Woreda	Rank	Top five causes of morbidity	
			Below five	Above five
	Itang special woreda	1	malaria	Malaria
		2	AURTI	AFI
		3	diarrhea	AURTI

		4	conjunctivitis	Diarrhea
		5	skin diseases	Injury
Nuer zone	Lare woreda	1	malaria	Malaria
		2	diarrhea	Dyspepsia
		3	AURTI	URTI
		4	pneumonia	Trauma
		5	Skin infection	Diarrhea
	Wanthoa woreda	1	malaria	malaria
		2	AFI	AFI
		3	diarrhea	Diarrhea
		4	pneumonia	AURTI
		5	skin infection	injury
	Mekuey woreda	1	malaria	Malaria
		2	AFI	AFI
		3	pneumonia	AURTI
		4	diarrhea	Diarrhea
		5	skin infection	Injury

Outbreak

During 6 month period (May – October) no outbreak occurred in all assessed woredas. Moreover, there were no ongoing outbreak

Preparedness

Enquiry into emergency preparedness in the visited Woredas revealed that all visited Woredas shortage of amoxicillin suspension, SC kit and SC rooms, TTC eye ointments, RDT for malaria. They also lack emergency response Response Teams (RRTs) exist in all the visited Woredas even if it is active during outbreak

Risk Factors

Malaria

All assessed woredas malaria is endemic. The zones and woredas were implemented malaria intervention (distribution of ITN's and IRS in 2018, The ITN coverage for 2018 was 95% and the IRS coverage was 87%. The last 6 month from May- October 2018 malaria were reduced compared to 2017.

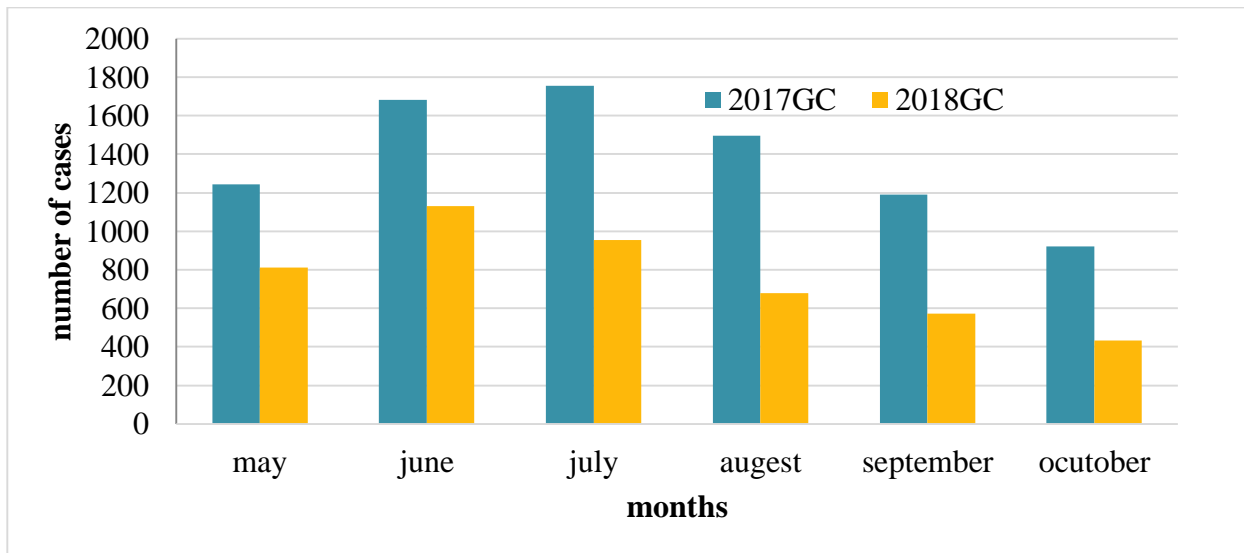


Figure: 17 Trend of Malaria in Nuer Zone and Itang special woreda from May-October 2018

23 kebeles (52,163 populations) in Itang special woreda and (28 Kebeles (47,633 populations) in in Lare woreda, 23 kebeles (31,976 populations) in Wanthoa woreda and 21 kebeles (24,320 populations) in Mekuey woredas) in Nuer Zone. In all assessed woreda malaria prevention and control activity is going on.

The following risk factors were identified for malaria:

- Malaria endemic area
- Presence of malaria breeding site
- Interrupted or potentially interrupting rivers

AWD

There was no AWD epidemic reported the last 6 month (May to October 2018). There is Cholera outbreak control guidelines.

Measles

There was no ongoing measles outbreak from May to October 2018 in all assessed woredas. Case definition were posted every visited health facility but shortage of measles guidelines.

Flooding

22 Kebeles of (Itang special woreda, Wanthoa woreda, Mekuey woredas) were affected by flooding from July to September 2018 which was caused by heavy rain and over flow of Baro river.

Meningitis

No meningitis case or death was reported during May to October 2018 in all visited health facility.

Drungunliasis

From May to October 2018 No outbreak occurred. GWD guideline were available and Case definition posted all assessed health facility.

Nutrition

The number of malnourished children admitted at TFP in Mekuey woreda and Itang special woreda were high compared to the other woreda. In Lare, Mekuey, Wanthoa and Itang special woreda increased on September 2017 as shown in the below graph (figure 1). In contrary, the number of TFP admission in all visited woreda decreased on October 2018

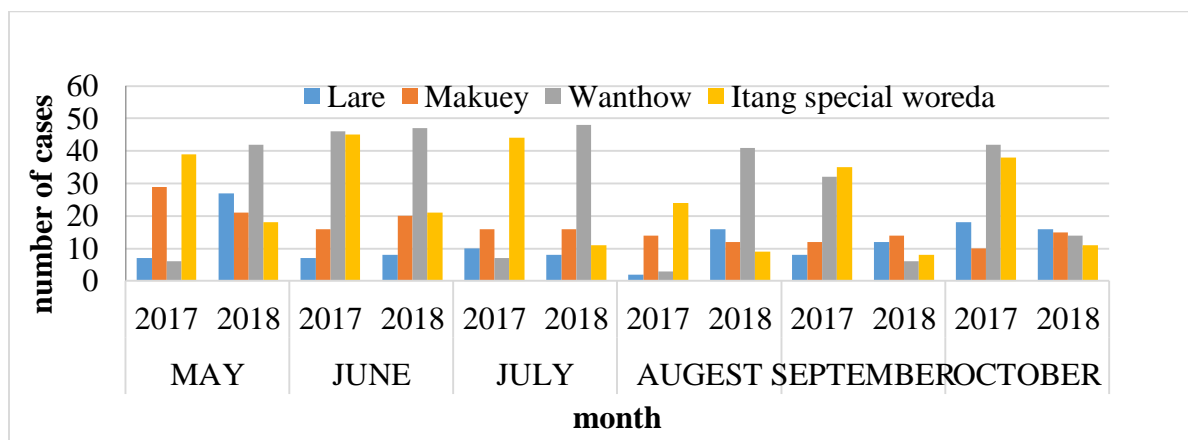


Figure: 18 SAM cases reported by woredas, from May-October, 2018

All visited Woredas health facility, they are shortage of therapeutic supplies like F100, F75 and RUTF from May-October, 2018

Table: 11 SC and OTP sites by Woreda from May-October, 2018

Zones	Woredas	SC	OTP
Nuer zone	Lare woreda	1	8
	Mekuey woreda	1	7
	Wanthoa	1	8
	Itang special woreda	3	8

CONCLUSION

There was a functional multi-sectorial coordination forum, the forum have meets monthly and quarterly. There is Emergency preparedness and response plan, but lack emergency response fund. Rapid Response Teams (RRTs) exist visited zones and Woredas even if it is active during outbreak.

All assess woreda border with south Sudan and Refugee influx; malaria, Meningitis, measles, EVD, SAM, GWD were anticipated risk.

All the assessed Woredas malaria is endemic areas and the top public health emergencies in the Region but the last 6 month from august to September 2018 malaria trend decreased compared to 2017, this decrement due to malaria implementation and intervention made the last 6 month. presence of malaria breeding sites and interrupted or potentially interrupting rivers in each of the Woredas; total of 52,163 of populations in Itang special woreda, 23,563 of population in Mekuey woreda, 31,976 of population in wanthoa woreda and 47,633 in lare wereda at risk population.

22 kebeles are internally displaced from flood during cropping season but returned to their places of origin after the water receded.

All visited Woredas reported shortage of (amoxicillin suspension, TTC eye ointments, RDT for malaria of RUTF, F100, F75, SC kit for SAM cases in SC for nutrition and immediately/weekly reportable diseases guidelines) from upcoming November to April 2018/19.

RECOMMENDATION

- Appropriate budget should be allocated for emergency situations
- Should be Strengthening adequate therapeutic drugs and medical supplies
- Kept it up of malaria prevention and strategies
- measles guidelines should be distributed

REFERENCE

1. Belg Season Rapid Emergency Needs Assessment Report, Health Sector in Gambella Region, June 2017

Chapter 7- Protocol /proposal for epidemiologic research project

7.1 Knowledge, attitude and Practice of disease surveillance and reporting among health workers in Nuer zone, Gambella region, Ethiopia

Abstract

Background: Public health surveillance is the continuous, systematic collection, analysis and interpretation of health-related data needed for the planning, implementation, and evaluation of public health practice. In Ethiopia there are 22 nationally notifiable diseases. The surveillance system in the country relies on health care providers to report notifiable diseases, outbreak or any unusual occurrence of illness to the respective health department based on the reporting periodicity. The literature on knowledge, attitudes and practices of health care workers on notifiable disease surveillance is very poor. Therefore this study aimed to assess knowledge, attitude and practice of notifiable disease surveillance and reporting among health workers in Nuer zone.

Method: A descriptive cross sectional study will be conducted. Government health workers who are working in health facility will be studied. A multi stage cluster sampling technique will be used to select study participants. The total number of study subjects which will be included in the study is 408. The data will be collected using self-administered questionnaire. The study will be conducted from May 1 to 16/2019 in Nuer zone

INTRODUCTION

Effective communicable disease control relies on effective response systems and effective response systems rely on effective disease surveillance, a Notifiable disease surveillance is one for which regular, frequent, and timely information regarding individual cases requires for the prevention and control of the disease [1]. The collected information is used for monitoring trends, program planning, evaluation, policy development, research, and monitoring the effectiveness of prevention and control activities. It also serve to protect the public's health by ensuring the proper identification and follow-up of cases and helping to improve health department distribution of limited resources for targeted investigations and interventions.

International Health Regulation enforced all member countries including Ethiopia to notify: Smallpox, poliomyelitis due to wild type polio virus, human influenza caused by a new sub type, and SARS and also events of potential international public health concern like cholera, plague, yellow fever, VHF and other diseases that have special National concern and diseases which have unknown cause and source (3)

In Ethiopia there are 22 nationally notifiable diseases. The disease are selected based on their high epidemic potential such as anthrax, avian human influenza, cholera, measles, meningococcal meningitis, pandemic influenza, smallpox, SARS, viral hemorrhagic fever, and yellow fever required internationally under IHR like smallpox, poliomyelitis, human influenza caused by a new subtype, SARS, diseases targeted for eradication or elimination it includes poliomyelitis, drancunculiasis, neonatal tetanus (NNT) and diseases which have a significant public health importance such as rabies, dysentery, malaria, relapsing fever, typhoid fever, typhus and severe malnutrition(3).

These diseases are reported on weekly and immediately basis. Weekly reportable diseases are reported to the respective health department through weekly reporting forms and immediately reportable diseases are reported through case based reporting forms. The compiled reports are reported to the respective health department through telephone communication, mail and reporting formats (3).

Disease surveillance and reporting in Ethiopia starts from community level in this regard health posts are the main source of surveillance information. The health post compile surveillance

information in standard forms, analyzed and then forwarded to the next district health office, then the district level compile, aggregate and send the data to zone/regional state health offices, from which central level (Ethiopian Public Health Institute) receives. At all level data analysis, interpretation and dissemination of this data for those who needs it is expected to be done. For identification and detection of cases standard and community case definition is used (3).

STATEMENT OF THE PROBLEM

Geographical zone leading to inequitable distribution of equipment, disease reporting instruments, logistic support, good road network; to the lack of competency of the health care worker resulting in poor knowledge and low awareness of reportable disease; and also, to the lack of willingness to report diseases completely and on time due to cumbersome disease reporting procedure, poor staff motivation and support (6).

Completeness and timeliness of reporting is one measure of surveillance performance (3). Especially Akobo woreda in Nuer zone which have poor surveillance performance below the minimum requirement 80% for the consecutive the last three years. However in this woreda, the completeness was very poor and also there was a big difference NDS practice from other woreda in the zone.

At Woreda level the capacity for preparedness is limited due to lack of clear planning and insufficient budget allocated for emergencies. Communication is still a challenge, particularly in most remote wereda in the zone which tend to also be the mostly affected any health hazard. The lack of transport resources in most Woredas limits the response capacity for emergencies.

Poor reporting completeness indicate the presence of under reporting of disease in the Woreda. Therefore, in this reporting completeness, it is difficult to detect outbreaks early, trends cannot be accurately monitored and prevention and control measure cannot be taken on time. This is the main reasons to select the Nuer zone to conduct this study.

LITERATURE REVIEW

Factors associated with knowledge

Study conducted in Nigeria among health care workers in Bennie state revealed that from the participated health care workers 98.8% of the respondents were aware of disease surveillance and notification system (8). Similarly a descriptive cross-sectional study conducted in Anambra state, Nigeria revealed 89.9% of health care workers were aware of the disease surveillance and notification system and Knowledge of use of the various forms at the facility and local government facility levels were generally low (9).

Qualitative study conducted in Georgia indicate health care providers do not have accurate knowledge of list of notifiable disease and the majority of practioner do not have adequate understanding of who will use the information and for what purpose (10). On the study conducted in Germany on physicians indicate the existence of case definitions was unknown to 86.5% of the respondents; 75.2% expressed their desire to have Case definitions available (11).

Attitude of disease reporting among respondents

All the respondents Rufunsa District felt that IDSR was necessary. Despite the stated feeling, about 9% of them were of the opinion that it wasted time and interfered with clinical work, and that it was a cumbersome activity. However, the majority (45.5%) of the respondents were of the opinion that IDSR was helpful in facility planning and in disease surveillance. Furthermore, about one- third (33.3%) of the respondents felt that IDSR does not limit the transmission of diseases in the instances where prompt feedback from the higher authority offices in the Ministry of Health lack (13).

A study made Rufunsa District, more than half (51.5%) of the respondents were of the opinion that IDSR lacked local support such as periodical training followed by mentorship, regular and scheduled supervisory assistance as well as some form of financial aid from the superiors at a Health Facility level, District Health Office, Provincial Health Office or even the Ministry of Health Headquarters. Furthermore, 63.5% of the respondents were of the opinion that prompt feedback when diseases are reported to the higher levels was lacking (13).

Factors associated with practice

The study further reviewed that Health Care Workers in Rufunsa had a better option of reporting notifiable diseases by using motorcycles and Mobile Phones as opposed to post boxes since all the facilities had motorcycles. However, the use of mobile phones proved not to be much reliable because only one health facility had electricity provided by means of a diesel- powered generator, hence posing challenges of running equipment such as computers, printers and charging mobile phones (13).

A study made on Iranian general physicians the majority (88%) of the participants stated that they had never reported a notifiable disease. Due to the lack of knowledge and time. They suggested that appointing a person other than them as well as simplifying the method of report as recommendations (15).

The experimental study conducted in Nigeria studied the effect of training on notifiable disease surveillance and reporting and compared a study and control group "before and after" training program conducted. The study showed an increment on the percentage completeness and timeliness after training provided for health workers (completeness: was 2.3% before training and 52.0% after. Timeliness: was 0.0% before and 42.9% after). The study mentioned training as a positive effect on health personnel knowledge, reporting requirement and the timeliness and completeness of the disease surveillance and notification system (18).

Logistics related factors about NDS Practice and reporting

A cross sectional study conducted in the south western states of Nigeria to find out the effect of logistics on the reporting practice of NDS. This study identified lack of office (57.1%) for the surveillance units, (77.2%) inadequate transport and (81%) lack of funding as a major factors for the poor performance surveillance activities. In addition, the inadequacy of reporting forms and stationeries as reported by 52.4% of the respondents was significantly associated with non-reporting of outbreaks. (14).

A study was made in Enugu Nigeria, 2013. On the factors responsible for the practice of NDS for both public and private health facilities. This study identified attending training on IDSR and supply of IDSR forms were the major factors on NDS practice only 15% of public and 88% of private health workers had received training on IDSR. 67.5% of public and 11.3% of private

health facilities had a regular supply of IDSR forms. The main factor for regular reporting practice in the area was supervision (16).

SIGNIFICANCE OF THE STUDY

This study aims to improve Nuer zone surveillance data timeliness and completeness rates and also will contribute to the solving of the problem of having inadequate and low quality data being generated and reported by the health workers from the health facilities. In addition to this, it will provide a useful input for improving detection of unusual occurrence of diseases, monitoring trends and information for action in the Nuer zone.

Finally, the finding will be also used as a basis for providing trainings for health professionals based on the recommendations of the study which will improve the capacity of the health workers in the smooth implementation of the NDS and reporting system.

OBJECTIVE

General objective

- To assess Knowledge, attitude and Practice of disease surveillance and its associated factors among health workers in Nuer zone, Gambella region, Ethiopia, 2019.

Specific objective

- To determine knowledge of health workers in notifiable disease surveillance and reporting
- To describe resources availability for disease reporting at health facility
- To identify health workers attitude about disease surveillance and reporting
- To identify the factors that are associated with practice disease Surveillance

METHODOLOGY

Study Area and period:

Nuer zone is one of 3 zones in Gambella region and it has 5 woredas in the zone. It has a total population of 151,638 among these 75,436 men and 76,202 women. It is bordered in the east with South Sudan in the Northwest with Itang special woreda and southwest Jor woreda. The zone has 1 primary hospital, 7 health centers and 35 health posts and 408 health workers.



Map: 6 of map Gambella region showing nuer zone

Study period

The study will be conducted from May 1 to 16/2019 in Nuer zone

Study design

A cross sectional study design will be used by using quantitative data collection method.

Source population:

The source populations for this study will be all health professionals working in government health facilities in Nuer Zone, Gambella region, i.e. 408.

Study population:

The study population will be randomly selected health worker from 10 government health facilities in Nuer zone.

Eligibility criteria

Inclusion criteria: Health workers who are working government health facilities in selected health facility (e.g. Medical directors, health officer, nurses) will be included in the study

Exclusion criteria: health worker who are not available in the health facility during the study period will be excluded in the study.

Sample size:

SAMPLING TECHNIQUE & SAMPLE SIZE DETERMINATION

The sample size will be determined by using single population proportion formula with the following assumptions: p= proportion of respondents that have knowledge on disease surveillance and notification in a study conducted in Anambra state Nigeria were 89.8%. q = 1-p proportion and d = precision level 3%=0.03, 95 % confidence interval (Z= 1.96). Therefore, P=0.898 and P=1-0.898=0.102

The sample size will be estimated by the single proportion formula

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

- n-is minimum sample size
- p-is estimate of the prevalence rate for the population
- d-is the margin of sampling error tolerated
- $Z_{\alpha/2}$ is the standard normal variable at 1- α % confidence level and α is mostly 3%

$$n = \frac{(1.96)^2 0.898(1-0.898)}{(0.03)^2} = 391$$

Since our source population is less than 10,000, which is 408 we use the correction formula as follows.

$$n_f = \frac{n}{1 + \frac{n}{N}}$$

$$n_f = \frac{391}{1 + \frac{391}{408}}$$

$$= \frac{391}{1 + 0.956} = 199.69(200)$$

$$408$$

Where

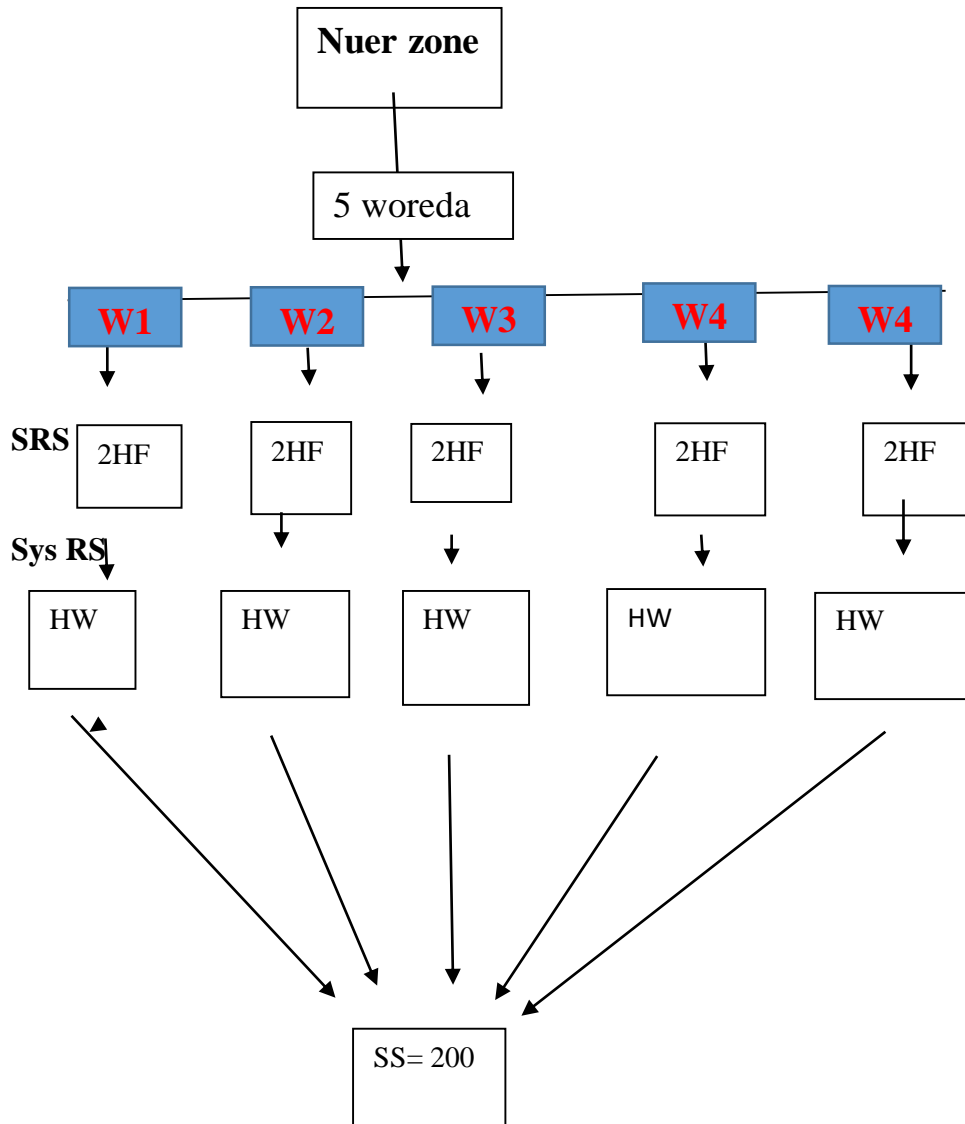
- ❖ n_f = final sample size
- ❖ n=total study population which is 391
- ❖ N=source population which is 408

Sampling procedures

Selection of study subjects will be carried out through a multistage sampling technique. In Nuer zone there are a total of 5 woreda. Among these the study will be conducted all Woreda purposively. In the first stage two health facilities will be selected by using simple random sampling from each woreda. In the second stage, systematic Sampling procedures will be used to

obtain required number of health workers from each selected health facility. Finally, a total of 20 health workers will be selected from each health facility.

Fig. 19 sampling frame and selection hierarchy



KEY:

W_ Woreda

HF – health facility

HW – health worker

Simp. RS - Simple random sampling

Sys R S - Systematic random sampling.

SS-----Sample size

Dependent Variable

Knowledge, attitude and Practice of disease surveillance and reporting among health workers

Independent Variables

- Age
- Sex
- Educational status
- currently working in
- work experience

Data Collection

Data will be collected through primary source which will be face to face interview with health worker using structured interviewer administered questionnaire adapted from different studies. Participants of the study will be questioned on socio demographic questions that will be included: age, sex, work experience, level of education, employment as well as on knowledge on the purpose of disease surveillance, disease under notification, reporting route, reporting periodicity, reporting formats and they will be asked for timeliness and completeness of their data. In addition observation data on the availability of facility record and to check timeliness and completeness will be collected. The questionnaire will focus on socio-demographic, Knowledge, Attitude and practice.

Data will be collected for 7 days by 4 trained data collectors using structured questionnaires. The data collectors will describe the purpose of the study and ask respondents whether they are willing to participate in the study.

Data Analysis

The collected data will be coded, tallied manually. The descriptive statistics like frequencies, percentages, means, medians and ranges will be worked out by using SPSS. Cross tabulations will be used to show relationship between dependent and independent variables. Chi-square will be used to determine the association between categorical variables and a p -value of less than 0.05 indicated significant association. Data will be presented in the form of figures, graph and Table.

Data Quality Assurance

The questionnaire will be pre-tested out of study area in Nuer zone, Gambella region. Five data collectors and one supervisor will be recruited as well as training will be given. At the end of each day, the questionnaire will be checked for completeness and consistency by the supervisors.

Ethical Considerations

Ethical clearance will be obtained from review board of Addis Ababa University, College of Health Sciences and the School of Public Health. . Permission will be sought from Gambella regional state health bureau and district health offices.

Finally, respondents will be requested for their verbal consent to participate in the study after informing their participation is entirely based on their willingness to do so. Thereafter, a detailed explanation will be given on the purpose of the study including the benefit of the study.

Confidentiality will be assured for the information provided by using coding system rather than stating the name of study participants. Furthermore, one page of informed consent form will be attached as a cover page for each questionnaire and after respondents agree, the data collectors will check at the bottom of it to show respondents' agreement before administering the questions.

Operational definitions

Knowledge: health worker who respond 75% and above have Good knowledge, 70-75% have Fair knowledge, below 75% have poor knowledge on notification diseases.

Attitude: health worker who respond 75% and above have Good attitude, 70-75% have Fair attitude, below 75% have poor attitude on notification diseases.

Practice: health worker who use any of the notification diseases method at time of work for disease report are practiced. Otherwise not practiced

DISSEMINATION PLAN

The results will be presented to AAU School of public health department of filed epidemiology. Extracting articles and publication in peer reviewed, national or international journals will be

considered. The findings of the study will be forwarded to Gambella regional health Bureau, district health offices and NGO.

BUDGET BEAK DOWN

Stationary

No	Items	Unit	Quantity	Unit price	Total price
1	Notebooks	Pcs	10	15.00	150.00
2	Pen	pack	1	500.00	500.00
3	Pencil	pcs	5	5.00	25.00
4	Photocopy paper	pack	2	250.00	500.00
5	Eraser	pcs	5	5.00	25.00
Total					1200.00 birr

Personnel and Transport cost

Work type	N.o	Duration	Per diem	Total cost	
1	Principal investigator	1	15	390	5,850
2	Supervisor	1	15	390	5,850
3	Data collector	5	15	390	29,250
4	Printing and binding research report				500
5	Transport(car rental)	1	15	2,000	30,000
Total					74,450 birr

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Chapter 8- Epidemiological Bulletin 2018

8.1 Lare woreda Gambella region annually epidemiological bulletin 2018

Health Bureau of Gambella

Peoples Regional State



Public Health Emergency

Management Core Process

Epidemiological Bulletin 2018

ANNUALLY EPIDEMIOLOGICAL BULLETIN OF WEEK 1-52/ 2018 AT LARE WOREDA
GAMBELLA PEOPLES REGIONAL STATE

PUBLIC HEALTH EMERGENCY MANAGEMENT (PHEM) CORE PROCESS

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Highlights of the feedback:

Completeness and Timeliness rates were 100%, 96% respectively

- One Perinatal Death
- Malaria cases has been decreased by 22.3%;
- Malnutrition cases has been decreased by 18.7%;
- Relapsing Fever Increased compared to last year
- Keep improvement of surveillance data quality;
- Keep improvement of surveillance data timeliness and completeness rates;

INTRODUCTION

This epidemiological annually surveillance data feedback serves to provide key information on public health surveillance performance at lare woreda in Gambella People National Regional State of Health Bureau and its reporting sites on priority diseases and conditions. This feedback mainly includes surveillance data completeness and timeliness, data quality, diseases/conditions reports and recommendations of 1-52 week of 2018.

Surveillance Report Completeness and Timeliness

Weekly Surveillance Data Completeness

The completeness rate was 98% lare health center and 100% of lare health post, Timelines lare wereda 96%. Both health center and health post which is above 80% WHO minimum requirement.

health facility	All-Total-sites- Reported	All-Total-sites Expected	Completeness (%)	Timelines (%)
Health post	357	364	98%	96%
health center	104	104	100%	96%

Table: 12 Total-sites-Reported/Total-sites-Expected completeness and timeline of lare woreda surveillance report, week 1-52, 2017/18.

Data Quality

No data quality issues identified during data analysis

Diseases and Conditions

Immediately Reportable Diseases/conditions

There were one Perinatal Death reported in 2018

Weekly Reportable Diseases

Malaria

A total of 6,512 febrile cases were suspected, 4,338 malaria cases (clinical and confirmed) with zero death reported from lare district. It was decreased by 22.3% (1250) when compared to 2017 last years

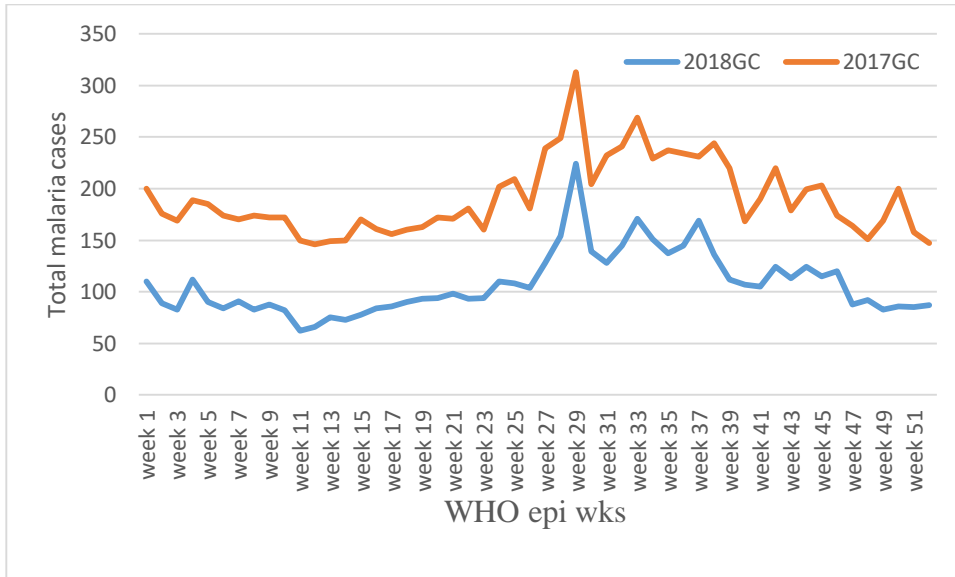


Figure: 18 Lare woreda malaria Trend by epi week 1-52/2017 and 2018

Sever Acute Malnutrition

A total of 126 cases of sever acute malnutrition were reported with no death in 2018 and has decreased by 18.7% (29 cases) when compared to last years

Dysentery

A total of 2 dysentery cases were reported in 2018 and has decreased by 97.4% (77 cases) when compared to last years.

Typhoid Fever

A total of 17 cases of typhoid fever were reported 2018 and has decreased by 86% (104 cases) when compared to last years.

Epidemic Typhus

There were zero cases of epidemic typhus reported.

Scabies

A total of zero cases of scabies were reported

Relapsing Fever

There were 4 Relapsing Fever cases reported in 2018 and has increased when compared to last years

Meningitis

There were zero Meningitis case reported

Outbreak Situation

There were no active ongoing outbreak existed in the lare woreda in 2018 despite one Perinatal Death outbreak identified based on the data analysis for week 1- 52/2018

Recommendations

- Kept it up the highest achievements in completeness and timeliness rates of the weekly surveillance data of the region
- Keep the surveillance data quality and scan the weekly surveillance database for data quality problems before it's being sent
- There were decrement with regard to trend of malaria cases in the lare woreda. Kept it up of malaria prevention and strategies
- regular supervision and monitoring activities should be conducted
- disease prevention strategies has made good progress, kept it up the strategies had implemented before
- strong prevention and implementation needed for the cause of Perinatal death
- Environmental sanitation and personal hygiene should be promoted to control Relapsing Fever

Annex 1: Questionnaires for Case - control study on measles

Case status

1. Case _____, Control _____

Case / Control Name _____, Date of Data collection _____

camp _____ Zone _____ community _____ h. no _____ Phone _____

I. Socio-demographic Characteristics

S. No	Questions	Alternatives
1.1	Sex	1. Male 2. Female
1.2	Age	years _____ Months _____
1.3	Family Occupation	1. Farmer 2. Housewife 3. Student 4. Unemployed 5. Daily laborer 6. Merchant 7. Gov't 8. Other (specify) _____
1.4	Religion	1. Orthodox 2. Protestant 3. Muslim 4. Catholic 5. Other (specify) _____
1.5	Ethnicity	1. Nuer 2. Agniwa 3. Denka 4. Other (specify)
1.6	Educational level of the patient	1. KG 2. Grade 1-2 3. Grade 3-4 4. Grade 5-6 5. Grade 7-8
1.7	Educational level of the family	1. Illiterate 2. Read and write

		3. Elementary 4. Secondary 5. Above secondary
1.8	Family size	_____
1.9	Is there any sick person with rash, fever, running nose/conjunctivitis (illness) In the family?	1. Yes 2. No
1.10	If yes, number of sick persons	_____
1.11	What is monthly average income of the family?	_____

II. Clinical History of Diseases:

2.1	What was the symptom?	1. fever 2. Rash 3. Cough, if present is it 1. Productive _____or 2. Non productive _____ 4. coryza (runny nose), 5. conjunctivitis (red eyes) 7. loss of appetite 8. Vomiting 9. malaise 10. Lymphadenopathy 11. arthralgia 12. Others _____
-----	-----------------------	--

2.2	what was the complication? If any?	a) Pneumonia: <input type="checkbox"/> yes no <input type="checkbox"/> b) Cornea bleeding: <input type="checkbox"/> yes no <input type="checkbox"/> c) Blindness : <input type="checkbox"/> yes no <input type="checkbox"/> d) Convolution <input type="checkbox"/> yes no <input type="checkbox"/> e) Otitis media (ear discharge): <input type="checkbox"/> yes no <input type="checkbox"/> f) diarrhea : <input type="checkbox"/> yes no <input type="checkbox"/> g) Sign of malnutrition <input type="checkbox"/> yes no <input type="checkbox"/> h) Mouth ulcers <input type="checkbox"/> yes no <input type="checkbox"/>
2.2	Date of rash on set	___ / ___ / ___
2.3	Duration of rash _____	
2.4	Did you visit health facilities?	<input type="checkbox"/> yes no <input type="checkbox"/> , if yes date _____
2.5	Illness duration before visiting the health facility	_____ in days/hours
2.6	Did you (he/she) take treatment?	1. Yes 2. No
2.7	If yes, treatment taken	1.ORS 2. Antibiotics 3.Vitamin A 4. Supplementary food 5. TTC ointment 6. Anti pyretic 7. Others given _____
2.8	From which part of the body rash started?	_____

2.9	Status of the case patient after treatment	1. cure 2. partially 3. deteriorated/disabled 4. death
-----	--	---

III. Risk factor

3.1	Have you ever vaccinated for measles?	1. Yes 2. No 3. Unknown
	If yes last vaccination date	1. patient/parent recall _____ dd/mm/yy 2. vaccination card _____ dd/mm/yy
3.2	Number of vaccine doses received	1. one dose 2. two dose 3. three and above
3.3	Age of patient at first vaccination	_____
3.4	If not vaccinated why?	<input type="checkbox"/> lack of knowledge about vaccination campaign, <input type="checkbox"/> absence during vaccination campaign, <input type="checkbox"/> other, specify
3.5	Did you have any travel history 7-18 days to areas with active measles cases before onset of symptoms?	1. Yes 2. No If Yes where _____

3.6	Did you contact with a person with measles symptoms within the last 2-3 weeks?	<input type="checkbox"/> yes <input type="checkbox"/> no
3.7	Do you have any travel history four days before and after rash onset	1. Yes 2. No If yes where _____
3.8	Do you have any contact history with someone else four days before and after rash onset	1. yes 2. No If yes with whom _____
3.9	Do you know modes of transmission for measles?	1. Yes 2. No 3.If yes specify _____
3.10	Did you ever have measles infection?	1. Yes 2. No 3. Don't know
3.11	Nutritional status of the cases	1. Normal 2. Moderate 3. Severely malnourished
3.12	How many family members live together?	_____
3.13	House condition?	<input type="checkbox"/> ventilated <input type="checkbox"/> not-ventilated
3.14	Distance from house to HC?	<input type="checkbox"/> greater than 2km <input type="checkbox"/> equal or less than 2

		km
3.15	Where did you go first when you get ill?	<ol style="list-style-type: none"> 1. Health Facility 2. Traditional Healers 3. Holy Water 4. Stayed at home 5. Other :(Specify)_____
3.16	Do you Know measles is vaccine preventable?	<ol style="list-style-type: none"> 1. Yes 2. No 3. Don't Know
3.17	Whom do you think can be affected by measles?	<ol style="list-style-type: none"> 1. Children of aged less than 5 years 2. Children of aged less than 18 years 3. Women of any ages 4. Any age groups of both male and women 5. Other (specify):_____
3.18	How do you think measles can be cured?	<ol style="list-style-type: none"> 1. Using modern medicine 2. Using traditional Medicine 3. Holly water 4. By feeding nutritious foods 5. Keeping the sick person indoor 6. Other(Specify)_____

Annex 2: Health profile checklist:

Region _____ Zone _____ Woreda _____ Respondant _____ Interviewer _____

1. Historical back ground of the area

1.1 Establishment time of the area as woreda _____

1.2 *Name of historical places _____

1.3 Historical Nomination _____

2. Population and demography

2.1. Total population of the woreda _____ Male _____ Females _____

2.2. M to F Ratio _____

2.3. Ethnic composition _____

2.4. Population density _____

2.7 Crude death rate _____

2.8 Under five mortality rate _____

2.9 cause specific mortality rate _____

2.5. Total live births _____

2.6. Under one year population _____

2.7. Under five year population _____

2.8. Reproductive year female population _____

2.9. Annual growth rate _____

2.10. Religion:

Orthodox _____

Muslim _____

Protestant _____

Catholic _____

Others _____

3. Geographic and climate condition

3.1 Area in Square km _____

3.2. Location of the woreda from capital of the region _____

3.3. Boundaries _____

3.4. Altitude of the area (in meters) _____

3.5. Latitude of the area (in meters) _____

3.6. Longitude _____

3.7. Annual Rainfall _____ Main rainy season _____

3.8 .Annual Temperature _____

3.9. Maximum temp _____

3.10. Minimum temp _____

4. Political and administrative organization

4.1 Total number of Kebeles _____

A/Urban _____

B/Rural _____

4.2 Number of Kebeles with transportation access _____

A/Asphalt road

B/

4.3 Number of Kebeles without transportation access _____

4.4 Number of Kebeles with electric power _____

4.5 Number of Kebeles without electric power _____

4.6 Number of kebeles with telephone service (cable based/wireless) _____

4.7 Number of Kebeles without telephone service _____

4.8 How many supporting NGOs are in the area _____

4.9 Ruling political party _____

4.10 Bank _____

5. Productivity and income

5.1 main base of economy _____

5.2 part of the population (%) whose economic source is from

a) Farming _____

b) Animal production _____

c) Trade _____

d) Government employee (salary) _____

e) Others _____

5.3. Average annual income level _____

5.4. Productivity of the land/hectare _____ quintal/hectar

5.5. Common crop products _____

5.6. GDP (during harvesting season/ meher)_____quintal

5.7. GDP from irrigation_____quintal

5.8. Total GDP _____quintal

5.9. Employment rate_____ Unemployment rate_____

6. WASH

A/Water supply

6.1. Safe water supply coverage_____

6.1. Source of water_____

6.2. Separate water source for human and animal

A/yes_____

B/no_____

6.3. Number of kebeles

With accessible water source_____

Without accessible water source_____

6.2. Number of pipe water supply_____

6.3. Is there treatment of water_____

6.4. Frequency of treatment_____

6.5. Source other than pipe water

Yes_____

No_____

6.6. Is the water source safe? (Fence, can cattle access the water)

B/Latrine

6.8. percent of latrine coverage_____

A/Latrine with

B/Latrine without.....

6.9. Open field defecation (OFD)_____%

6.10. Number of public latrine in the woreda_____

C/Sanitation

6.11. Any campaign in the last year for environment hygiene_____

6.12. Any prepared site or container for disposal of solid waste in the town_____

6.13. Drainage system for liquid waste disposal_____

7. Education

7.1. Number of enrollment in elementary schools

Male_____

Female_____

7.2. School dropout_____%

7.2. Number of enrollment in secondary schools

Male_____

Female_____

7.3. School dropout_____%

7.3. Number of colleges/universities_____ Total number of students_____

7.4. Number of teachers at elementary_____, secondary_____ and colleges/universities_____

8. Social situation:

8.1. Number of libraries_____

8.2. Number of NGO working on public health_____

8.3. Number of youth clubs_____

8.2. Number of recreational area for youth_____

9. Health service institutions and infrastructure

S. N O	Type of health institution		No of institutions
1	Number of Hospitals	with sustainable/ 24 hour /electric power	
		without sustainable/ 24 hour /electric power	
		with telephone service(cable based/mobile)	
		without telephone service (cable based/mobile)	
		with piped water supply	
		Without piped water supply	
2	Number of Health Centers	with sustainable/ 24 hour /electric power	
		without sustainable/ 24 hour /electric power	
		with telephone service (cable based/mobile)	
		without telephone service (cable based/mobile)	
		with piped water supply	

		Without piped water supply	
3	Number of Hospitals		
4	Number of Health centers		
5	Number of Health post		
6	Number of private clinics		
7	Number of Pharmacies		
8	Number of Drug vendors		
9	Number of Diagnostic laboratories		
10	Hospital to population ratio		
11	Health center to population ratio		
12	Health posts to population ratio		
13	Physical health service coverage		
14	Number of institution providing service on OTP		Hospital_____
			Health center_____
			Health post_____
15	Number of institution providing SC service		Hospital_____
			Health center_____
			Health post_____

9.14. Top 10 diseases of morbidity and mortality in adult OPD:-

Morbidity cases	Mortality cases
-----------------	-----------------

Rank	Diseases	%	Rank	Disease	%
1	-----		1	-----	
2	-----		2	-----	
3	-----		3	-----	
4	-----		4	-----	

9.11. Top 10 Diseases of morbidity and mortality in under 5 OPD:-

Morbidity cases			Mortality cases		
Rank	Diseases	%	Rank	Disease	%
1-----			1----		
2----			2----		
3----			3----		

10. Health staff to population ratio:

General Practitioner (GP) _____

Health officers _____

Nurses _____

Medical lab _____ Pharmacy _____, Env'tal _____

Health extension workers _____

Other _____

11. Vital statistics and health indicators

S. No	Indicator	Rural	Urban	Total

1	Under 5 population			
2	Productive age female (15-49 years)			
3	Pregnant women			
4	Live births			
5	Total fertility rate			
6	Crude birth rate			
7	Crude death rate			
8	maternal mortality rate			
9	Child mortality			
10	Under 5 mortality rate			
11	Infant mortality rate			
12	Dependency ratio			
13	Average household size			

12. Maternal health coverage

S.No	Type of service	Coverage (%)
1	Antenatal care (ANC) Coverage (%)	
2	Contraceptive acceptance rate (CAR (%))	
3	Contraceptive prevalence rate (CPR (%))	

4	Post natal care (PNC) Coverage	
5	Proportion of delivery attended by skilled personnel	

13. Endemic disease

A) Tuberculosis

S. No	Cases	Number		
		male	female	Total
1.	TB case detection rate			
2.	TB treatment success rate			
3.	TB treatment cure rate			
4.	Defaulters			

b) MALARIA

S. No	Malaria cases		Adult		Under 5		Preg.	Total		M + F
			Male	Female	Male	Female		M	F	
			1	Confirmed malaria cases	Pf					
		Pv								
		Mixed								

c) HIV/AIDS

HIV prevalence_____

HIV Incidence_____

VCT_____

PMTCT_____

ON ART_____

PITC_____

14. DISASTERS AND OUT BREAKS OCCURRED, immediately reportable disease

14.1 Were any disasters occurred in these years_____?

14.2 If Q.14.1 is yes list the name

14.3 Which of the above mentioned disaster(s) was (were) Happened more than once?

14.4 How many out breaks occurred in the last 5

years_____ (List_____

14.5 Which of the above mentioned outbreak(s) was (were) occurred more than once?

14.Nutrition, food

shortage_____

—

Healtheducation_____

Health budget allocation

Essentialdrugsandothersupplies_____

15.Discussion of the highlights and the main findings of the health profile assessment and description _____

Annex 3: Questionnaire for Knowledge, attitude and Practice of disease surveillance and reporting among health workers among health workers in Nuer zone, Gambella region

Informed consent sheet

I. consent form

Hello my dear, my name is _____ and I'm here on behalf of study team carrying out — **Knowledge, attitude and Practice of disease surveillance and reporting among health workers among health workers in Nuer zone, Gambella region** . The research finding will benefit on improving surveillance and reporting and this will help to improving detection of unusual occurrence of disease or outbreaks, monitoring trends and generally on utilizing information for action in the zone.

You are selected for the study because you are in the study group with the hope that you will cooperate with us. We assure all information gathered during the course of the study will be kept completely confidential. All the information that you are going to deliver to us will be coded for anonymity. Only the principal investigators will have access to the data. We are kindly requesting you to answer the questions that we have prepared for you.

Would you be willing to participate? Yes1 No2

Having been well explained and informed of the intentions and benefits of the study, I voluntarily consent to participate in the study.

Signature of respondent: ----- Date: -----

Interviewer name: ----- Signature: ----- Date: -----

Questionnaire for Disease Surveillance and its associated factors among health care workers in Nuer zone Government health facility

Part I, Questionnaire related to socio demographic characteristics

Words: _____ Code no: _____

Name of health facility: _____		
S.No	Questions	Choice of answer
1	Age	Years ____
2	Sex	1. Male 2. Female
3	What is your educational status?	1. Diploma 2. Degree 3. Above mention _____
4	What type of work you are currently working in?	1. Nurse 2. Lab. Technician 3. Physician 4. medical director 5. others mention _____
5	What is your work experience as a health worker	1. less than 1 year 2. 1-5 year 3. 5-10 years 3. above 10 year

Part II: Questioners Related to Knowledge

S.No	Questions	Choice of answer
1	Do you know the number of notifiable disease	1. Yes, if yes how many are they?

	in the country	_____ 2.No
2.	If yes what are they (Multiple responses are allowed)	1.Malaria 2.Pandemic Influenza A 3.Measles 4.Polio 5.Anthrax 6.SARS 20.Hepatitis
3	Do you know the reporting periodicity of this diseases	1.Yes 2.No
4	If yes what is the periodicity	1.Monthly 2.Daily 3.Weekly 4.Quarterly
5	What is the purpose of notifiable disease surveillance and reporting	1. To know change in trend of disease 2.for planning 3.to detect disease outbreak 4.for program planning and evaluation 5. Research purpose
6	Do you know notifiable disease reporting formats	1.Yes 2.No

7	What are they (Multiple responses are allowed)	1. Weekly reporting form 2. case based reporting forms 3. linelist 4. Epidemic reporting forms 5. Rumor log book 6. HMIS reporting forms 7. Others mention_____
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Part III. Questionnaire related to attitudes

S. No	Questions	Choice of answer
1	Surveillance is useful to detect epidemic	1. Yes 2. No 3. Don't know
2	Reporting communicable disease is one of the public health responsibility of health workers	1. Yes 2. No 3. Don't know
3	How do you feel the surveillance and reporting system in general	1. Convenient 2. Not convenient 3. Not familiar with the system
4	Reporting communicable diseases is time consuming and should not be done by health care workers	1. Yes 2. No 3. Don't know
5	If you are too busy to report or if you are engaged in another work like training would you report	1. Yes 2. No

	notifiable diseases	3.Dont know
6	reporting method that you would like to use the most	1.Reporting through telephone at the facility, 2.Reporting through fax 3..Reporting through internet 4.Reporting through mobile 5.Others-----
7	What kind of measures will increase your willingness to report	1. Simplified reporting procedure 2.Feedback of disease epidemic information from government through fax or telephone 3.recharging mobile card for reporting or reimbursement of fees of mobile card 4.Commendation by Ministry of health 5.Others _____

IV. Factors associated with practice

1	Have you ever diagnose a reportable disease	1.Yes 2.No 3.Dont know
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2	Ever reported reportable communicable diseases (Among those who have ever diagnosed) surveillance and reporting	1.Yes 2.No
3	If no Q2, Reasons for not reporting diseases	1 no format 2 no network 3 no road to send hard copy to zonal/ region
4	Number of times of reporting	1.one time 2.two times 3.Three times 4. Four times 5. More than 4 times
5	For whom you report	1.Medical director 2.Surveillance officer 3.Woreda health office 4.Regional Health bureau 5. for EPHI
6	What was methods of reporting	1.Fax 2.Internt 3.Reporting sheet 4.Telephone

		5.Others mention_____
7	When do you report the weekly reportable disease to the next reporting level	1.Monday 2.Tuesday 3.Wednesday 4.Friday 5.Other_____
8	Do you have reporting formats (Observe)	1.Yes 2.No
9	Which reporting formats are available (Observe)	1.Weekly reporting form 2.Case based forms 3.Line list 4.Epidemic reporting form 5.Other_____
10	What is the timeliness of your report within the past six month (Check from the record)	1.Above 80% 2.Below 80%
11	What is the completeness of your report within the past six month (Check from the record)	1.Above 80% 2.Below 80%

12	Have you ever gave feedback information to the reporting health facilities	1.Yes 2.No
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